ASTRONOMICAL OBSERVATIONS

MADE AT THE

OBSERVATORY OF CAMBRIDGE

BY

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VOL. XV.

FOR THE YEAR 1843;

WITH AN APPENDIX,

CONTAINING AN

ACCOUNT OF THE NORTHUMBERLAND EQUATOREAL AND DOME.

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PREFACE.

The Observations of 1843 contained in this Volume were made either by myself or Mr Glaisher, with the exception of a few Circle Observations from Nov. 20 to the end of the year by Mr Arthur George Berry, who was appointed Junior Assistant in consequence of the decease of Lieutenant Baldrey, which occurred at the Observatory on Oct. 22. The Circle Observations were principally taken by Mr Glaisher. The total number of observations has necessarily fallen below the average of former years on account of my having the assistance of but one observer.

The objects embraced by the Meridian Observations are the Sun, the Moon, the Planets Mars, Vesta, Juno, and Ceres, double stars whose angles of position and distances had been observed with the Northumberland Telescope, Moon-culminating stars, and stars used for reference in Equatoreal Observations.

The Equatoreal Observations of 1843 (excepting occultations of fixed stars by the Moon), are not included in this Volume, being reserved for separate publication with observations made with the Northumberland Equatoreal in subsequent years.

All the observations have been completely reduced with the strictest attention to accuracy, and the calculations have all been scrupulously examined.

The interval that has elapsed since the publication of Volume XIV, has been remarkable for the discovery of New Planets and Comets, which have been diligently observed here both on the meridian and with the Northumberland Equatoreal. The delay in the present publication has been mainly owing to the attention given to these new objects, and to the occupation of my time in reducing observations of them for immediate use.

Two Appendices are added to this Volume. The first contains observations made in 1846 in search of the Planet Neptune, which, being distinct from the ordinary course of observations at this Observatory, and possessing points of particular and immediate interest, it was thought proper to insert in the Volume first published after the observations were made. Two Reports to the Senate of the University relating to this Planet are also inserted.

The other Appendix is an Account of the Northumberland Equatoreal and Dome drawn up by the Astronomer Royal, on whom, as having had the sole arrangement of the mounting and apparatus of the Instrument, the task of describing it seemed peculiarly to devolve. It may be proper to state that the account was published with the consent and at the expense of the late Duke of Northumberland, Chancellor of the University, and that Mr Airy had the kindness to order that the size and printing of the work should allow of its being bound up uniformly with a Volume of Cambridge Observations, and to reserve 250 copies for that purpose. My first idea was to prefix the account to the proposed Volume of observations made exclusively with the Northumberland Equatoreal, but fearing that the distribution of the copies would thus be too long delayed, I have preferred attaching it to the present Volume.

J. CHALLIS.

Cambridge Observatory,
July 3, 1848.

CONTENTS.

ERRATA.

IN THE VOLUME FOR 1838.

P. 114, in the Catalogue. The R.A. of ✳ N.P.D. $33^{\circ}.38'$ should be $1^{h}.22^{m}.41^{s},86$.

IN THE VOLUME FOR 1842.

p. xxxvi, line 22. *For* $-0^{m},100$ *read* $+0^{m},100$.

p. 111, in the Catalogue. *For* Σ 734 *sf, read* Σ 734 *nf.*

IN THE VOLUME FOR 1843.

p. 2. Jan. 4. *For* Σ 840 *np read* Σ 840 *nf.* The remark in the memorandum book was 'larger taken, *np.*' The larger is *nf.*

p. 3. Adopted losing rate Jan. 5. *For* $-0,9$ *read* $-0,09$.

p. 24. June 10, the observation of ι^1 Libræ is 1^{m} in excess.

p. 52. Oct. 2. ☉ 2 L, after wire II, each of the wires should be increased 1^{s}. The concluded Transit will thus be 12.32.24,06, the seconds of transit corrected, 20,03, and the apparent R.A. from observation, 12.31.41,40. This error is allowed for in pages 178 and 183.

p. 94. Feb. 22, δ Ursæ Minoris. At the foot of the columns should be inserted, Feb. 22. 8^{h}, Molyneux fast on Hardy, $1^{m}.8^{s}$; and in the Notes, Times by Molyneux, $6^{h}.24^{m}.22^{s}$ and $6^{h}.24^{m}.52^{s}$.

p. 96. Feb. 23, δ Ursæ Minoris. At the foot of the columns should be inserted, Feb. 23. 2^{h}, Molyneux fast on Hardy, $1^{m}.8^{s},8$; and in the Notes, Times by Molyneux, $6^{h}.20^{m}.42^{s}$ and $6^{h}.21^{m}.6^{s}$.

pp. 102 and 103, April 10. *For* γ^1 Virginis *read* γ Virginis.

p. 104, May 1. Opposite α^2 Libræ R. M. insert the Pointer and Microscope Readings of α^1 Libræ R. M., and opposite α^2 Libræ M, insert the Pointer and Microscope Readings of α^1 Libræ.

p. 112, June 15. *For* Σ 1822 *read* Σ 1882.

p. 116. *For* July 6 *read* July 7.

CAMBRIDGE OBSERVATIONS.

INTRODUCTION.

The *Instruments* and *methods of observing* employed in the Observations recorded in this Volume, are described in the Introductions to the Observations of 1838 and previous years. The following pages contain explanations of the tabulated Observations and such occasional notices as could not be given at length in the body of the work, together with an account of the constants and formulæ used in the Calculations.

1. *Transits as observed, and Calculation of Apparent Right Ascensions.* Pages 1—69.

The first division of the tabular portion of the work is allotted to the Transit Observations and the Calculation of Apparent Right Ascensions.

The *first column* of the *left-hand* pages contains the day of the month, supposed always to commence with the Sun's meridian passage.

The *second column* contains the names of the objects observed. With respect to nomenclature the following rules have been adhered to with very few exceptions. Stars contained in the Nautical Almanac have the same names here given them as in that work. Stars in the Catalogue of the British Association, and not in the Nautical Almanac, are named, in preference, by the letters in that Catalogue; next, by Flamsteed's numbers; and lastly, by the numbers of the Catalogue. The hour and number of Piazzi's Catalogue are used, if the star is not in the Catalogue of the British Association. Double stars in Struve's *Catalogus Novus,* if not found in any of the above-mentioned works, are designated by the letter Σ prefixed to the number of that Catalogue. All other stars are named by their approximate North Polar Distances.

In observations of double and multiple stars, the rule generally followed both in the Transit and Circle observations is, to select the brightest when decidedly brighter than the others, and of two or more nearly equally bright, to take the preceding. In many instances the observer notes the one selected as *preceding*, *following*, *north*, *south*, *north preceding*, *north following*, *south preceding*, *south following*, by the letters *p*, *f*, *n*, *s*, *np*, *nf*, *sp*, *sf*, in their usual signification, the preceding star being that of less R.A., and the north star that of less N.P.D. This is done when the application of the foregoing rule is doubtful, or when the stars are very close, to shew that they are seen separate, or to facilitate the identifying of the stars. The above letters are placed after the names of the stars in the second column, only in case the observer has noted thus at the time of observation the star selected.

The *seven succeeding columns* contain the times, by the Transit clock, of passage over the seven wires. The hour and minute in the seventh of these columns always refer to the wire last observed.

When, as not unfrequently happens from atmospheric and accidental causes, the times of transit across all the wires cannot be observed, a correction is necessary for reducing the mean of the observed times to the time of transit over the mean of all the wires. This reduction is effected by adding (with the proper sign) to the mean of the observed

times, the sum, divided by the number of wires observed, of the distances in time of the omitted wires from the mean of all. (See Introduction to the Observations of 1836, p. xiii.)

The following table of intervals of the seven wires from the mean of all, which was used from the beginning of the year to August 21, is the same that was employed in 1842. The wires are distinguished by the letters *A, B, C, D, E, F, G*; and stars above the Pole pass them in this order when the illuminated end of the axis is East.

Intervals of the wires from the mean of all.

Wire.	Interval for an Equatoreal Star.	Interval for δ Ursæ Minoris. Declination = 86°. 35′ + n″.	Interval for 51 (Hevelii) Cephei. Declination = 87°. 15′ + n″.	Interval for Polaris. Declination = 88°. 28′ + n″.
	s.	m. s. s.	m. s. s.	m. s. s.
A	− 40,375	− 11 . 17,75 − n × 0,055	− 14 . 2,01 − n × 0,085	− 25 . 11,91 − n × 0,275
B	− 26,910	− 7 . 31,61 − n × 0,037	− 9 . 20,87 − n × 0,057	− 16 . 46,55 − n × 0,183
C	− 13,538	− 3 . 47,17 − n × 0,018	− 4 . 42,24 − n × 0,029	− 8 . 26,03 − n × 0,092
D	− 0,038	− 0,64	− 0,69	− 1,42
E	+ 13,607	+ 3 . 48,33 + n × 0,019	+ 4 . 43,56 + n × 0,029	+ 8 . 28,63 + n × 0,092
F	+ 26,873	+ 7 . 31,00 + n × 0,037	+ 9 . 20,21 + n × 0,057	+ 16 . 45,19 + n × 0,183
G	+ 40,381	+ 11 . 17,84 + n × 0,055	+ 14 . 2,05 + n × 0,085	+ 25 . 12,12 + n × 0,275

An examination of the intervals by the observations of Polaris SP. on June 16 and 17 (1843), shewed that no sensible error could have arisen from the use of the above Table to that period. Subsequently a new computation of the intervals was made in the manner explained in p. xiv. of the Introduction to the Volume for 1837, from nine transits of Polaris taken from June 16 to Oct. 9 (those in which more than one wire was lost being excluded), and twenty-eight complete transits of δ Ursæ Minoris extending from Jan. 12 to Sept. 20. The following Table of results is used from Aug. 21 to the end of the year.

Wire.	Interval for an Equatoreal Star.	Interval for δ Ursæ Minoris. Declination = 86°. 35′ + n″.	Interval for 51 (Hevelii) Cephei. Declination = 87°. 15′ + n″.	Interval for Polaris. Declination = 88°. 28′ + n″.
	s.	m. s. s.	m. s. s.	m. s. s.
A	− 40,400	− 11 . 18,16 − n × 0,055	− 14 . 2,53 − n × 0,085	− 25 . 12,84 − n × 0,275
B	− 26,934	− 7 . 32,02 − n × 0,037	− 9 . 21,38 − n × 0,037	− 16 . 47,46 − n × 0,183
C	− 13,517	− 3 . 46,81 − n × 0,018	− 4 . 41,80 − n × 0,029	− 8 . 25,24 − n × 0,092
D	− 0,068	− 1,14	− 1,31	− 2,54
E	+ 13,604	+ 3 . 48,27 + n × 0,019	+ 4 . 43,49 + n × 0,029	+ 8 . 28,50 + n × 0,092
F	+ 26,898	+ 7 . 31,41 + n × 0,037	+ 9 . 20,72 + n × 0,057	+ 16 . 46,10 + n × 0,182
G	+ 40,418	+ 11 . 18,47 + n × 0,055	+ 14 . 2,83 + n × 0,085	+ 25 . 13,53 + n × 0,275

The intervals for a star whose North Polar Distance is not very small, are obtained by multiplying the intervals for an equatoreal star by the cosecant of N.P.D. For the Sun and Planets an additional factor is used, which is deduced from the horary variation of their R.A. given in the Nautical Almanac. The multiplier for the Moon takes account of the variation of R.A. as affected by parallax, and is calculated from the expression

$$\frac{3600 + I}{3600} \times \frac{\textit{sin. Moon's geocentric Z.D.}}{\textit{sin. Moon's apparent Z.D.}} \times \textit{cosecant of N.P.D.},$$

where I is the increase of the Moon's R.A. in passing over 1^h of terrestrial longitude, given under the head of Moon-culminating Stars in the Nautical Almanac.

The first limb of Mars when near opposition, was in a few instances observed at the wires A, C, E, and G; and the second limb at the wires B, D, and F. The observation of each limb is in these cases corrected to the mean of all the wires.

The corrections to the mean of all for wires omitted occupy the *tenth column.*

The concluded times of transit over the mean of the seven wires, as given by the clock, are placed in the *eleventh column.*

The *twelfth column* contains the initial of the observer's name. The observations marked C are by myself, and those marked G by Mr Glaisher.

The space immediately below the columns contains notices of the position of the instrument and the order of the wires. Incidental and explanatory remarks are introduced at the bottom of the page. To give an opportunity of judging of the weight due to individual observations, it was thought right to omit the mention of no circumstance which seemed likely in any way to affect an observation, especially if the object were the Sun, the Moon, or a Planet.

The columns of the *right-hand* pages contain the elements of the calculation by which the Apparent Right Ascensions are inferred from the concluded times of Transit; which is done by applying corrections for *Error of Collimation*, *Level Error*, *Meridian Error*, and *Clock Error*. The methods of obtaining these corrections will here be severally stated in the order of their application.

Error of Collimation.—A wooden cross in the form of X, placed so that the vertical micrometer-wire can be brought to bisect its acute angles, serves as a southern mark for determining the error of collimation. It is fixed on the tower of Grantchester church, at the distance of about $2\frac{1}{2}$ miles, and its angular distance West of the meridian is about 14″. To avoid any error that may arise from a change of position of the axis of the instrument by the reversion, a northern mark is also used. Instead of a fixed northern mark, for which there is no convenient object, a small transit instrument is put up as a horizontal collimator in the northern opening for the shutters, and the micrometer-wire is applied to a selected point of the image of one of its wires. This is found in practice to answer well enough the required purpose.

The following were the observations made in 1843 for the determination of the collimation error.

April 24, 22^h. I reversed the Transit. The circumstances were favorable except that the cross was rather unsteady.

Illuminated End of Axis West.

		r.
Mean of 6 readings, micrometer-wire	coincident with D	24,201
.... 6	bisecting South mark	25,246
.... 6	bisecting North mark	21,536

Illuminated End of Axis East.

		r.
Mean of 10 readings, micrometer-wire	bisecting North mark	25,434
.... 9	bisecting South mark	24,277
.... 6	coincident with D	24,194

Reading for line of collimation by South mark	24,762
.... North mark	23,485
Reading for true line of collimation	24,124
Reading for D	24,198

As the micrometer readings increase in going from the illuminated end of the axis, stars entering from the West come to D before coming to the true line of collimation. Hence the error of collimation of D (that is, the angular deviation of the line of collimation

through D to the *east* of the true line of collimation) is $+0^{r},074$ in micrometer revolutions, or $+1'',26$ in arc, one micrometer revolution being $17'',06$. By the Table in p. ii, the mean of all the wires is nearer to the illuminated end of the axis than D by $0^{s},038$ or $0'',57$. Hence for illumination East, the error of collimation of the mean of the wires, inclusive of the correction $-0'',18$ for diurnal aberration, is $+1'',26-0'',57-0'',18=+0'',51$.

After the above measures were taken, it was found that the West pivot did not rest in its Y, the descent being apparently prevented by a want of adjustment of the friction wheels of the counterpoise relatively to the Y. This circumstance does not affect the accuracy of the above determination, the employment of the two marks correcting for an accidental displacement of the axis of motion. The micrometer reading for the bisection of the South mark the next day, after the pivot had been made to rest on the Y, was $23^{r},184$.

July 14, $6\frac{1}{2}^{h}$. The Transit was reversed. The cross was clear before the reversion, but waved so considerably that I took a second series of bisections, which, however, gave the same result as the first. After the reversion the cross was faint and unsteady. The collimator's wire was seen pretty well.

Illuminated End of Axis East.

	r.
Mean of 6 readings, micrometer-wire coincident with D	24,126
.... 7 .... bisecting South mark	23,018
.... 8 .... bisecting North mark	18,180

Illuminated End of Axis West.

	r.
Mean of 8 readings, micrometer-wire bisecting North mark	30,248
.... 10 .... bisecting South mark	25,006
.... 6 .... coincident with D	24,127
Reading for line of collimation by South mark	24,012
.... North mark	24,214
Reading for true line of collimation	24,114
Reading for D	24,127

Since the reading for D is greater than that for the true line of collimation, the error of its collimation (Illumination West) is $-0^{r},013$, or $-0'',22$. Hence the error of collimation of the mean of the wires, inclusive of the correction for diurnal aberration is $-0'',22+0'',57-0'',18$, or $+0'',17$.

By the second Table in p. ii. the mean of all the wires is nearer than D to the illuminated end of axis by $0^{s},068$, or $1'',02$, according to which the concluded error of collimation is $+0'',62$. This value is used from August 21.

Oct. 29, $22\frac{1}{2}^{h}$. The Transit was reversed. The cross was pretty clear and steady before reversion, and very clear but not steady after reversion. The collimator's wire was not quite distinct, and appeared to me to start suddenly during the time the measures were taken.

Illuminated End of Axis West.

	r.
Mean of 8 readings, micrometer-wire coincident with D	24,122
.... 8 .... bisecting South mark	25,232
.... 7 .... bisecting North mark	25,896

Illuminated End of Axis East.

	r.
Mean of 9 readings, micrometer-wire bisecting North mark	22,287
.... 8 .... bisecting South mark	22,981
.... 8 .... coincident with D	24,114
Reading for line of collimation by South mark	24,107
.... North mark	24,092
Reading for true line of collimation	24,100
Reading for D	24,118

Hence the error of collimation of *D* (Illumination East) is $+0^{\mathrm{r}},018$, or $+0'',31$; and the error of collimation of the mean of the wires, with the correction for diurnal aberration, is $+0''31 - 1'',02 - 0'',18$, or $-0''89$.

The values of collimation error used in the reduction of the Transits are placed in the *first column* of the right-hand page, with bars across to indicate the limits within which each value is used. The time of reversion is stated in the space below the columns.

The correction to the observed time of each Transit is in seconds of time,

$$\frac{1}{15} \times \textit{collimation error} \times \textit{cosecant of } \text{N.P.D.},$$

the N.P.D. being considered negative when the star passes below the pole.

Level Error.—The angular deviation of the axis of revolution of the Transit from a horizontal plane is found by applying to the pivots a spirit-level, furnished with a cross-level adjustment, and with graduated scales for reading off the positions of the extremities of the bubble. It is the practice to reverse the level five times, and thus obtain six eastern and six western readings, the scales being first disposed in positions convenient for reading off, which they retain during the whole of the operation. In the graduation of each scale the numbers increase in the direction from the middle of the bubble towards the extremity. Hence the algebraic *excess* of the sum of the western above the sum of the eastern readings, divided by the whole number of readings, is the measure, in degrees of the scales, of the *elevation* of the west end of the axis above a horizontal plane. This is converted into angular measure by multiplying by $1'',3$, the value of 1° of the scales. In consequence of the discussion of the relative size and form of the pivots given in pages vi. and vii. of the Introduction to the Observations of 1839, the correction $-0'',12$ or $+0'',12$ is added according as the illuminated end of the axis is West or East. For Polaris and δ Ursæ Minoris the corrections are $-0'',22$ and $+0'',22$. Since stars above the pole require a positive correction to their time of transit when the west end of the axis is the more elevated, the result thus obtained is the Level Error with its proper sign. This is placed in the *second column*, with bars across to indicate the interval during which each value is used.

The numerical correction applied to the observed time of each transit, previously corrected for error of collimation, is, in seconds of time,

$$\frac{1}{15} \times \textit{level error} \times \textit{cosine of Zen. Dist.} \times \textit{cosecant of } \text{N.P.D.},$$

the N.P.D. being negative when the star is below the pole.

The levelling is commonly performed once in a week, and the determination is used from the third or fourth day previous. The times of levelling are stated in the space below the columns of the right-hand pages.

The following Table contains a list of all the Level Errors obtained in 1843, with the times of levelling, position of the instrument, and Temperature in degrees of Fahrenheit, as shewn by a Thermometer in the Transit Room. In all the observations the Telescope was horizontal, and the object-glass southward.

Level Errors in 1843.

Time of Levelling.	Level Error.	Position of Illum. End of Axis.	Tempe-rature.
h.	″		°
Jan. 2 . 3	– 3,93	West	35
14 . 1	– 3,08	——	37
28 . 2	– 3,54	——	52
Feb. 13 . 2	– 3,80	——	37
22 . 2	– 3,58	——	42
Mar. 5 . 23	– 4,23	——	38
12 . 22	– 4,20	——	43
23 . 21	– 6,00	——	54
Apr. 2 . 22	– 5,91	——	54
10 . 22	– 6,83	——	36
16 . 22	– 6,01	——	55
24 . 22	– 6,76	——	46
25 . 5	– 4,11	East	48
30 . 22	– 3,43	——	61
May 11 . 22	– 4,12	——	57

Time of Levelling.	Level Error.	Position of Illum. End of Axis.	Tempe-rature.
h.	″		°
May 21 . 22	– 3,73	East	57
June 4 . 22	– 4,98	——	58
14 . 22	– 5,24	——	64
26 . 3	– 6,38	——	64
July 7 . 7	– 6,34	——	63
13 . 7	– 6,29	——	62
13 . 7	+ 0,62	——	62
14 . 7	– 0,17	——	63
14 . 8	– 0,14	West	63
23 . 21	+ 0,54	——	57
Aug. 2 . 23	+ 0,39	——	61
9 . 22	+ 0,69	——	60
18 . 6	+ 0,24	——	72
24 . 22	+ 0,02	——	63
30 . 22	– 0,12	——	66

Time of Levelling.	Level Error.	Position of Illum. End of Axis.	Tempe-rature.
h.	″		°
Sept. 8 . 3	– 0,81	West	70
17 . 21	– 0,29	——	66
26 . 2	– 1,55	——	55
Oct. 2 . 1	– 0,25	——	60
13 . 3	– 1,36	——	48
29 . 22	– 0,28	——	51
29 . 23	+ 2,01	East	53
Nov. 8 . 3	+ 1,91	——	48
21 . 3	+ 2,42	——	51
28 . 22	+ 2,30	——	48
Dec. 5 . 22	+ 1,93	——	44
14 . 22	+ 2,41	——	45
22 . 2	+ 2,46	——	45

Before the levelling of March 23 the counterpoises were made to act on the pivots, which they had not done since March of 1841. Although the amount of counterpoise was much diminished, the injurious effect of the friction wheels of the West pier, observed on former occasions, is still apparent by the sudden change of Level Error. (See Introduction to Vol. XIII. pp. vi. and xxxvii). After the reversion of April 25, the inclination of the axis was found too great to allow of using the Level, till the West pivot was forced into contact with the Y, when the Level Error became nearly what it was on March 12. It was clear that the cause of this great inclination was the resting of the West pivot partly against one friction wheel and partly against the Y. This must have been in some degree the case between March 23 and April 25.

On July 13 the screws of the East pier were moved to diminish the amount of Level Error. The spikes for turning the screws were moved *Southward,* the same direction in which they have been moved on all previous occasions of this kind; which appears to indicate a gradual depression of the West pier relatively to the East pier.

Before the reversion of July 14 the axles of the counterpoises were cleaned of rust, and the brass pieces on which they rest were re-adjusted, to prevent the recurrence of the irregularity observed on April 25. After the reversion of Oct. 29 I tried the effect of putting on and taking off the pressure of the counterpoises, the Level remaining on the pivots. The bubble changed position a very little. The counterpoise pressure applied on March 23 remained to the end of the year.

The measures of the excess of the radius of the pivot at the illuminated end above the radius of the other, as derived, by calculating in the manner given in p. xxviii. of Vol. X., from the reversions on April 25, July 14, and Oct. 29, are respectively, $-0'',58$, $+0'',06$, $-0'',47$. These are inconsistent with each other, and with like determinations in 1842. The first is, no doubt, affected by the irregularity above mentioned, and possibly the other two may be also.

Meridian Error.—The angle by which the plane of motion of the true line of collimation, (supposing the level error corrected), deviates from the plane of the meridian, has been generally found by two or more transits of Polaris, or δ Ursæ Minoris, alternately above and below the pole, and as often as possible, consecutive. When this method could not be employed, the meridian error has been deduced from a comparison of a single transit of one of these stars with the transit of a known star above and distant from the pole, and in a few cases, by the comparison of transits of δ Ursæ Minoris and 51 (Hevelii) Cephei.

The formulæ of calculation applicable to the above methods are obtained as follows. Let A, A' be the apparent right ascensions of two known stars, t, t' their times of transit as shewn by the clock, corrected for collimation and level errors, τ the clock's loss in the

interval between the transits, h, h' the coefficients of meridian error, positive except between the zenith and the pole, and calculated by the formula, coefficient $= \frac{1}{15} \times$ sin. Zen. Dist. $\times$ cosec. N.P.D., and z the meridian error in seconds of space, considered positive when the plane of motion of the line of collimation deviates on the South side of the Zenith towards the East. Then $A' - A = t' + h'z - (t + hz) + \tau$; and hence

$$z = \frac{A' - A - (t' - t) - \tau}{h - h'},$$

which is the general formula for meridian error. That it may be safely used, the denominator $h' - h$ must be large, and it is consequently necessary that one at least of the stars should be near the pole.

When two known stars, one or both near the pole, are employed, $A' - A$ is the difference of their assumed apparent R.A., and τ is inferred from the differences of the uncorrected times of transit of any southern stars observed on two days near the time of the observations for meridian error. In the instances in which δ Ursæ Minoris and 51 (Hev.) Cephei are the two known stars, one is observed above and the other nearly at the same time below the pole, their R.A. differing by about 12^{h}, so that h' and h are both large with opposite signs, and τ is too small to be taken account of.

If two observations of the same circumpolar star be used, one above and the other below the pole, and if ϵ be the increase of its R.A. in the interval between the observations, $A' - A = 12^{h} + \epsilon$, and

$$z = \frac{12^{h} + \epsilon - (t' - t) - \tau}{h' - h},$$

which is independent of any assumed R.A. of the star.

When three equidistant transits of a circumpolar star, alternately above and below the pole, have been obtained, there will be another equation like the preceding, in which ϵ and τ have nearly the same values; and if t'' be the time of the third transit, corrected for errors of collimation and level, the two equations give

$$z = \frac{(t'' - t') - (t' - t)}{2\,(h' - h)},$$

which equation is independent both of the R.A. of the stars, and of their change of R.A. and the clock's rate.

The numerical computation from the preceding formulæ is performed as follows, the meridian error being always a small quantity. When two stars are used the seconds of transits of the first (corrected for collimation and level errors) are increased by the seconds of the sidereal interval between the transits, which is derived from the assumed R.A. of the stars, and the seconds of transit of the second, by the loss of the clock in that interval. The algebraic excess of the former sum (care being taken to add or subtract 60^{s} that the difference may not exceed a smaller number of seconds) being divided by $h' - h$ gives the meridian error with its proper sign. The process is the same in the case of two transits of the same circumpolar star, the algebraic excess of the star's R.A. at the second transit above its R.A. at the first, being added to the seconds of the first transit.

When there are three consecutive transits of the same circumpolar star, the corrections for interval of transits and clock's rate are omitted, and the sum of the two differences of seconds of transit obtained from the first and second, and from the second and third,

is divided by double the difference between h' and h, the sign of the result being determined as before.

When more than three consecutive transits have been observed, a value of the meridian error is deduced from the first, second, and third; another from the second, third, and fourth; and so on. If the different values are nearly equal, the mean of all is used; when they differ considerably, they are used separately or in groups.

The following Table contains a list of the Meridian Errors used in this Volume, with an account of the methods by which they were obtained, and data by which the computation of them may be readily verified.

Meridian Errors in 1843.

Mean Time of Observation.	Star.	Seconds of Transit corrected for Collimation and Level Errors.	Correction for interval of Transits.	Correction for rate of Clock.	Excess of Seconds for first Star.	Value of $h'-h$.	Meridian Error.	Remarks.
h.		s.	s.	s.	s.		″	
Jan. 2. 0 2. 12	δ Ursæ Minoris δ Ursæ Min. SP.	16,39 9,00	− 0,02	+ 0,11	+ 7,26	+ 1,372	+ 5,29	
7. 6 7. 7	Polaris α Arietis	56,17 7,58	+ 18,84	0,00	+ 7,43	+ 1,514	+ 4,91	Not used.
8. 23 9. 11	δ Ursæ Minoris δ Ursæ Min. SP.	16,52 8,16*	+ 0,03	− 0,04	+ 8,43	+ 1,372	+ 6,14	* This is a mean from two observations. See 'Transits observed.'
12. 10 12. 11	β Tauri δ Ursæ Min. SP.	11,58 10,67	+ 3,12	0,00	+ 4,03	+ 0,708	+ 5,69	Not used.
15. 23 16. 11	δ Ursæ Minoris δ Ursæ Min. SP.	21,53 11,25	+ 0,03	− 0,11	+ 10,42	+ 1,372	+ 7,59	
Feb. 10. 8 10. 9	α Orionis δ Ursæ Min. SP.	26,07 12,02	+ 49,71	0,00	+ 3,76	+ 0,691	+ 5,44	Not used.
13. 9 16. 21	δ Ursæ Min. SP. δ Ursæ Minoris	13,16 23,95	+ 0,99	− 0,98	− 8,82	− 1,372	+ 6,43	
21. 7 21. 8	Rigel δ Ursæ Min. SP.	47,32 17,34	+ 33,93	0,00	+ 3,91	+ 0,680	+ 5,75	
22. 7 22. 8	α Orionis δ Ursæ Min. SP.	28,59 18,92	+ 53,12	0,00	+ 2,79	+ 0,691	+ 4,04	
23. 7 23. 8	α Orionis δ Ursæ Min. SP.	28,37 18,92	+ 53,41	0,00	+ 2,86	+ 0,691	+ 4,14	The mean of this and the two preceding, viz. + 4″,64, is adopted.
Mar. 3. 8 3. 8	δ Ursæ Min. SP. 51 (Hev.) Cephei	18,98 17,02	+ 46,80	0,00	− 11,24	− 1,541	+ 7,29	
4. 8 4. 8	δ Ursæ Min. SP. 51 (Hev.) Cephei	20,49 15,95	+ 45,98	0,00	− 9,48	− 1,541	+ 6,15	
7. 7 7. 7	δ Ursæ Min. SP. 51 (Hev.) Cephei	21,95 13,37	+ 43,72	0,00	− 7,70	− 1,541	+ 5,00	
8. 7 8. 7	δ Ursæ Min. SP. 51 (Hev.) Cephei	21,24 14,49	+ 43,03	0,00	− 10,22	− 1,541	+ 6,63	The mean of this and the three preceding, viz. 6″,27, is adopted.
17. 1 17. 13 18. 1	Polaris Polaris SP. Polaris	10,98 56,24 12,41			+ 14,74 − 16,17	+ 3,061 − 3,061	+ 5,05	
25. 1 25. 13 26. 0	Polaris Polaris SP. Polaris	3,18 52,29 3,47			+ 10,89 − 11,18	+ 3,061 − 3,061	+ 3,61	

Mean Time of Observation.	Star.	Seconds of Transit corrected for Collimation and Level Errors.	Correction for interval of Transits.	Correction for rate of Clock.	Excess of Seconds for first Star.	Value of $h'-h$.	Meridian Error.	Remarks.
h.		s.	s.	s.	s.		"	
Apr. 5 . 12 5 . 12	Polaris SP. Spica	49,25 31,62	+ 39,56	0,00	− 2,81	− 1,523	+ 1,85	Not used.
10 . 12 10 . 24	Polaris SP. Polaris	44,98 52,97	0,00	+ 0,14	− 8,13	− 3,061	+ 2,66	
16 . 23 17 . 11 17 . 23 18 . 11	Polaris Polaris SP. Polaris Polaris SP.	51,65 40,77 52,05 43,82			+ 10,88 − 11,28 + 8,23	+ 3,061 − 3,061 + 3,061	+ 3,62 + 3,19	The mean of these, viz. + 3″,40, is adopted.
Apr. 30 . 22 May 1 . 10 1 . 22	Polaris Polaris SP. Polaris	44,29 46,06 47,24			− 1,77 − 1,18	+ 3,061 − 3,061	− 0,10	The reversion of the Transit on April 24 appears to have changed the meridian error.
3 . 22 4 . 10	Polaris Polaris SP.	46,01 44,26	+ 0,24	+ 0,32	+ 1,67	+ 3,061	+ 0,55	
10 . 10 10 . 22	Polaris SP. Polaris	38,06 49,16	+ 0,27	+ 0,43	− 11,26	− 3,061	+ 3,68	
10 . 10 11 . 22	Polaris SP. Polaris	38,06 45,36	+ 0,87	+ 1,29	− 7,72	− 3,061	+ 2,52	The mean of this and the preceding, viz. + 3″,10 is adopted.
June 4 . 20 5 . 8	Polaris Polaris SP.	44,34 38,12	+ 0,33	+ 0,39	+ 6,16	+ 3,061	+ 2,01	
10 . 8 10 . 8	Polaris SP. Spica	40,88 48,86	+ 7,93	0,00	− 0,05	− 1,523	+ 0,03	
16 . 7 16 . 10	Polaris SP. δ Ophiuchi	42,51 56,22	+ 15,30	+ 0,08	+ 1,51	− 1,539	− 0,98	
17 . 7 17 . 8	Polaris SP. Arcturus	42,16 17,75	+ 36,69	+ 0,03	+ 1,07	− 1,545	− 0,69	The mean of this and the preceding, viz. − 0″,83, is adopted.
23 . 7 23 . 8	Polaris SP. Arcturus	41,54 13,24	+ 31,71	+ 0,03	− 0,02	− 1,545	+ 0,01	
July 7 . 6 7 . 7	Polaris SP. Arcturus	44,42 3,33	+ 19,73	+ 0,03	+ 0,79	− 1,545	− 0,51	
14 . 6 19 . 17	Polaris SP. Polaris	43,65 46,74*	+ 4,39	+ 3,80	− 2,50	− 3,061	+ 0,82	* The mean from two observations. 'See Transits observed.'
15 . 10 15 . 11	α Ophiuchi δ Ursæ Minoris	7,22 26,53*	+ 19,30	+ 0,03	− 0,04	− 0,677	+ 0,06	* The mean from two observations. This determination is not used.
24 . 10 24 . 12	δ Ursæ Minoris α Aquilæ	21,64 30,09	+ 11,24	+ 0,03	+ 2,76	+ 0,680	+ 4,06	Not used.
Aug. 2 . 10 2 . 22	δ Ursæ Minoris δ Ursæ Min. SP.	12,78 9,57	− 0,13	+ 0,18	+ 2,90	+ 1,372	+ 2,11	
4 . 21 5 . 9	δ Ursæ Min. SP. δ Ursæ Minoris	6,98* 10,26	− 0,15	+ 0,30	− 3,73	− 1,372	+ 2,72	* By only two wires.
10 . 9 10 . 21 11 . 9 11 . 21 12 . 9	δ Ursæ Minoris δ Ursæ Min. SP. δ Ursæ Minoris δ Ursæ Min. SP. δ Ursæ Minoris	5,34 0,82 4,58 59,81 3,22			+ 4,52 − 3,76 + 4,77 − 3,41	+ 1,372 − 1,372 + 1,372 − 1,372	+ 3,02 + 3,11 + 2,98	The mean of the three values, viz. + 3″,04, is adopted.
18 . 9 18 . 21 19 . 9	δ Ursæ Minoris δ Ursæ Min. SP. δ Ursæ Minoris	55,50 53,66 55,74			+ 1,84 − 2,08	+ 1,372 − 1,372	+ 1,43	
22 . 20 24 . 8	δ Ursæ Min. SP. δ Ursæ Minoris	48,29 52,91	− 0,56	+ 0,60	− 5,78	− 1,372	+ 4,21	

Mean Time of Observation.	Star.	Seconds of Transit corrected for Collimation and Level Errors.	Correction for interval of Transits.	Correction for rate of Clock.	Excess of Seconds for first Star.	Value of $h'-h$.	Meridian Error.	Remarks.
h.		s.	s.	s.	s.		"	
Aug. 31 . 7 31 . 8	α Ophiuchi δ Ursæ Minoris	37,30 45,81	+ 6,14	+ 0,03	− 2,40	− 0,677	+ 3,54	The value used, viz. + 3″,46, does not differ sensibly from this.
Sept. 2 . 8 3 . 19	δ Ursæ Minoris δ Ursæ Min. SP.	43,26 34,97	− 0,63	+ 1,02	+ 6,64	+ 1,372	+ 4,84	
3 . 19 4 . 7	δ Ursæ Min. SP. δ Ursæ Minoris	34,97 41,74	− 0,22	+ 0,34	+ 7,33	+ 1,372	+ 5,34	
7 . 7 7 . 8	α Ophiuchi δ Ursæ Minoris	31,90 36,44	+ 3,38	+ 0,03	− 1,19	− 0,677	+ 1,76	Not used.
12 . 7 12 . 19	δ Ursæ Minoris δ Ursæ Min. SP.	32,37 27,07	− 0,20	+ 0,31	+ 4,79	+ 1,372	+ 3,49	
16 . 7 16 . 8	δ Ursæ Minoris α Aquilæ	28,55 55,44	+ 29,30	+ 0,04	+ 2,37	+ 0,680	+ 3,49	The value used, viz. + 3″,60, was obtained by mistake.
20 . 18 23 . 6	δ Ursæ Min. SP. δ Ursæ Minoris	18,33 22,19	− 0,99	+ 1,58	+ 6,43	+ 1,372	+ 4,69	Almost identical with the next.
21 . 1 21 . 13 22 . 1	Polaris SP. Polaris Polaris SP.	36,94 51,01 36,30			− 14,07 + 14,71	− 3,061 + 3,061	+ 4,70	
28 . 1 28 . 13 29 . 1	Polaris SP. Polaris Polaris SP.	37,49 51,68 39,13			− 14,19 + 12,55	− 3,061 + 3,061	+ 4,37	
Oct. 5 . 12 7 . 0	Polaris Polaris SP.	48,82 36,54	+ 0,14	+ 0,60	+ 11,82	+ 3,061	+ 3,86	
7 . 0 9 . 12	Polaris SP. Polaris	36,54 51,84	+ 0,33	+ 1,00	− 15,97	− 3,061	+ 5,22	Before this the Telescope received a blow. See Transits.
13 . 0 14 . 12 15 . 23	Polaris SP. Polaris Polaris SP.	33,59 51,55 32,63			− 17,96 + 18,92	− 3,061 + 3,061	+ 6,02	The clock's rate was sufficiently steady during Oct. 13—16.
18 . 23 19 . 11 19 . 23	Polaris SP. Polaris Polaris SP.	35,87 53,27 33,04			− 17,40 + 20,23	− 3,061 + 3,061	+ 6,15	
26 . 23 28 . 11	Polaris SP. Polaris	32,89 54,28	− 0,19	+ 0,30	− 21,88	− 3,061	+ 7,15	
Nov. 3 . 22 4 . 10	Polaris SP. Polaris	39,03 50,66	− 0,11	+ 0,03	− 11,77	− 3,061	+ 3,84	
7 . 10 7 . 11	Polaris α Arietis	46,94 2,71	+ 22,11	0,00	+ 6,34	+ 1,514	+ 4,19	Not used.
15 . 21 16 . 9 16 . 21	Polaris SP. Polaris Polaris SP.	37,09 48,61 35,11			− 11,52 + 13,50	− 3,061 + 3,061	+ 4,09	
26 . 21 27 . 9	Polaris SP. Polaris	33,81 42,24	− 0,29	+ 0,14	− 8,86	− 3,061	+ 2,89	
28 . 21 29 . 8	Polaris SP. Polaris	31,30 39,75	− 0,30	+ 0,14	− 8,89	− 3,061	+ 2,90	
Dec. 8 . 8 8 . 9	Polaris α Arietis	31,27 1,07	+ 35,83	0,00	+ 6,03	+ 1,514	+ 3,89	
12 . 1 12 . 2	δ Ursæ Minoris α Aquilæ	49,84 44,13	+ 59,10	0,00	+ 4,81	+ 0,680	+ 7,07	This value is continued to the end of the year. The meridian error by the meridian mark at the reversion of the Transit on Jan. 6 (1844) was found to be + 8″,53.

The meridian error in seconds of space is placed in the *third column*, with bars across to indicate the limits within which each value is used.

The correction in seconds of time applied to each transit is

$$\frac{1}{15} \times \textit{meridian error} \times \textit{sin Zen. Dist.} \times \textit{cosec N.P.D.},$$

the zenith distance being negative when north of the zenith, and the north polar distance negative when north of the pole.

The seconds of each transit, corrected for the three errors of collimation, level, and azimuth, are arranged in the *fourth column*. The numbers for the Sun, and for Mars, when both limbs have been observed, apply to their centres, the mean of the uncorrected transits of the two limbs having been corrected in the same manner as other transits.

Clock Error.—The *fifth column* contains the seconds of the assumed apparent right ascensions of the stars used for determining clock error. Among these Polaris, δ Ursæ Minoris, and 51 (Hev.) Cephei are included, because their apparent right ascensions are employed for finding the meridian error, and may in any case give the means of judging of the position of the instrument. The Assumed Mean Right Ascensions, Jan. 1, 1843, of the fundamental stars and of the three just mentioned, are given in the subjoined Table.

Star's Name.	Assumed Mean R.A. Jan. 1, 1843.	Excess above Naut. Alm. 1843.	Star's Name.	Assumed Mean R.A. Jan. 1, 1843.	Excess above Naut. Alm. 1843.
	h. m. s.	s.		h. m. s.	s.
α Andromedæ..	0. 0.17,05	+0,07	Arcturus........	14. 8.30,19	+0,04
Polaris...........	1. 3. 0,29	−0,88	ε Bootis	14.38. 7,84	−0,02
α Arietis.........	1.58.20,22	+0,16	α² Libræ.........	14.42.12,22	+0,01
α Ceti............	2.54. 4,75	+0,07	α Coronæ Bor...	15.28. 2,54	+0,06
Aldebaran	4.26.55,12	−0,01	α Serpentis......	15.36.32,41	+0,17
Rigel	5. 6.59,72	−0,01	δ Ophiuchi......	16. 6. 7,40	+0,01
β Tauri	5.16.22,30	−0,02	Antares..........	16.19.47,49	+0,03
α Orionis........	5.46.40,42	−0,04	α Herculis	17. 7.29,45	+0,01
51(Hev.)Cephei	6.24.57,82	+0,00	α Ophiuchi......	17.27.39,02	+0,12
Castor............	7.24.34,45	−0,09	δ Ursæ Minoris.	18.22.57,52	−1,07
Procyon.........	7.31. 4,85	+0,03	α Aquilæ........	19.43. 7,44	+0,10
Pollux...........	7.35.42,01	−0,08	β Aquilæ	19.47.36,09	+0,06
α Hydræ.........	9.19.52,34	+0,01	α² Capricorni...	20. 9.20,35	+0,03
Regulus.........	10. 0. 0,34	−0,08	β Aquarii.......	21.23.17,45	+0,03
β Leonis.........	11.41. 2,91	+0,04	α Aquarii.	21.57.43,14	+0,07
Spica	13.16.55,87	+0,07	α Pegasi.........	22.56.56,69	+0,05

The assumed Mean Right Ascensions were obtained by adding the annual variations to the Mean Right Ascensions Jan. 1, 1842 concluded from the Observations of 1842, whenever the number of observations from which the R.A. of any star was concluded, was not less than twenty. In all other instances, if e be the excess of an assumed R.A. of 1842 above the R.A. of the Nautical Almanac, and e' the excess resulting from a number (n) of observations in that year less than 20, the excess of the assumed R.A. of 1843 is $e + (e' - e)\frac{n}{20}$, unless a correction has been applied to the R.A. of the Nautical Almanac. The excesses in the columns above take into account the corrections given in p. x. of the Prefaces to the Nautical Almanacs for 1842 and 1843. The mean of all the excesses, excluding those of the circumpolar stars, is $+0^s,031$.

To form the numbers of the fifth column, the excesses above the Nautical Almanac 1843 in the foregoing table, are added to the seconds of the apparent R.A. given in that work. It will be seen that the corrections which are thus adopted for aberration, precession, and nutation, are the same as those of the Nautical Almanac, where, in accordance with what is said in the Preface to the Astronomical Society's Catalogue, (pp. x. xiii.

and xiv.) the constant of aberration $=20'',36$, and that of lunar nutation $=9'',25$. For Polaris, δ Ursæ Minoris, and 51 (Hev.) Cephei, the additional corrections are applied, depending on the Moon's longitude, which are given in pages 478 and 479 of the Nautical Almanac for 1843, and the apparent R.A. of the last star are interpolated with second differences.

The clock errors of the *sixth column* are the excesses of the tabular apparent right ascensions (altered as just stated) above the corrected times of transit.

The correction applied to each transit for clock error consists of two parts, the error at the preceding 0^h of the clock, and the increase of error by the clock's rate in the interval between 0^h and the time of transit. These are calculated in the following manner. The observations are divided into groups, severally containing stars proper for giving clock errors. The groups are separated by intervals during which no observations have been taken, and which, as often as possible, belong to consecutive nights. The mean of the clock errors in each group is considered to apply to the mean of the times of transit of the stars which furnish them. The comparison of this mean error with errors similarly derived from the next preceding and following groups, gives a preceding and a following rate; whence a rate is inferred which is assumed to hold uniformly throughout the middle group. No definite rule can be given for inferring the adopted rate: attention is paid to the probable degree of accuracy with which the rates it depends on are determined, and also to the proportion of the intervals separating the preceding and following mean clock errors from the intermediate one.

1843. July 24. 12—13^h, the following observations were made for determining the difference of personal equation of myself and Mr Glaisher in taking transits. Stars of various N.P.D. were selected, and one observer took the transit of each star at the first four wires, the other at the remaining three, the observations being commenced by the two observers alternately.

Star.	Star's N.P.D.	Wire 1.	II.	III.	IV.	V.	VI.	VII.	Correction to Mean of Wires.	Seconds of Transit by C.	Seconds of Transit by G.	C—G
	° ′	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.	s.
69 Aquilæ	93 . 24	8,8	22,5	35,8	49,4	3,0	16,2	29,9	+ 20,24 − 26,99	49,36	49,38	− 0,02
ϵ Delphini	79 . 13	24,2	38,0	51,7	5,6	19,1	32,8	46,5	+ 20,57 − 27,43	5,37	5,44	− 0,07
s Vulpeculæ	69 . 21	10,1	24,5	38,6	53,3	7,8	22,0	36,4	+ 21,59 − 28,79	53,21	53,28	− 0,07
ϵ Cygni	56 . 37	25,4	41,8	57,8	14,1	30,3	46,2	2,6	+ 24,20 − 32,26	14,11	13,98	+ 0,13
r Vulpeculæ	63 . 29	2,1	17,0	31,7	47,2	2,1	17,0	32,1	+ 22,58 − 30,11	47,08	46,96	+ 0,12
20 Capricorni	109 . 38	20,5	35,0	49,0	3,7	18,0	32,1	46,1	+ 21,45 − 28,60	3,47	3,50	− 0,03
α Equulei	85 . 24	40,5	54,2	7,5	21,2	34,8	48,1	1,9	+ 20,27 − 27,03	21,12	21,24	− 0,12
ζ Capricorni	113 . 5	20,8	35,3	50,0	4,9	19,5	34,0	48,6	+ 21,96 − 29,29	4,74	4,71	+ 0,03

The mean of the eight values of C—G is $-0^s,004$. This is so small a quantity that the personal equations of C and G may be concluded to be the same, and accordingly no account is taken of them in determining clock errors and rates from a combination of observations of the two observers. The above results appear, however, to indicate a small difference depending on the N.P.D. of the star. C observes the slower moving stars somewhat *later* than G.

The adopted rate, which is put in the *seventh column*, is employed, first, in deducing from the mean clock error of the group to which it applies, the clock errors at all the times the clock shewed 0^h in the interval between the limits of the group, which errors are arranged in the *eighth column*; and then in finding the additional correction for the interval between each transit and the next preceding 0^h. Bars are placed across the seventh and eighth columns to indicate the limits of the groups to which the successive determinations of clock rate are applied. The times of putting forward the minute-hand of the clock are stated at the bottom of the page.

The apparent right ascensions of the *ninth column* are formed by adding the two parts of the correction for clock error to the corrected times of transit contained in the fourth column. The apparent R.A. of the fundamental stars, if fewer than three are contained in the same group, and the apparent R.A. of the circumpolar stars, if the meridian error is not determined by two or more transits of one of these stars, are not inserted in the column of apparent R.A.

The *tenth column* contains the corrections for aberration, precession and nutation, by applying which the mean Right Ascensions Jan. 1, 1843, are deduced from the apparent Right Ascensions. These corrections are calculated as follows.

For Stars whose apparent right ascensions are calculated in the Nautical Almanac, the requisite corrections are found by subtracting the apparent from the mean right ascensions of that work, the former in the instances of Polaris, δ Ursæ Minoris, and 51 (Hev.) Cephei, being affected with the corrections depending on the Moon's longitude. For a star in the Royal Astronomical Society's Catalogue, and not included in the list of the Nautical Almanac, the correction is calculated by the formula $Aa+Bb+Cc+Dd$; log A, log B, log C, and log D being taken from the Nautical Almanac without alteration, and log a, log b, log c, log d from the Astronomical Society's Catalogue. The sign of the result is then changed. For a star not included in that Catalogue, the correction is calculated by the following formula, depending on the expressions for a, b, c, d, given in p. xvii of the Preface to the Catalogue, and the sign of the result is changed.

$$\text{Correction} = \frac{A}{15} \cos Æ. \operatorname{cosec} N.P.D. + \frac{B}{15} \sin Æ. \operatorname{cosec} N.P.D. + C \times (n^0 \log = 0,4869)$$

$$+ \frac{C}{15} \times (n^0 \log = 1,3020) \times \sin Æ. \operatorname{cotan} N.P.D. + \frac{D}{15} \cos Æ. \operatorname{cotan} N.P.D.$$

The *Apparent Right Ascensions of Polaris and δ Ursæ Minoris*, (page 72) are merely extracted from the columns of Calculated Apparent Right Ascensions: and the *Mean Right Ascensions, Jan.* 1, 1843, *of these Stars* (in the same page) are formed by adding algebraically the corrections in the tenth column to the apparent Right Ascensions. The *Mean Right Ascensions, Jan.* 1, 1843, *of Stars observed in the year* 1843, (pages 73—82) are formed in the same manner.

The *Catalogue* in pages 83—85 contains the mean R.A. of each star concluded from all the preceding values of its mean R.A. The *Annual Variations* are either adopted from the Nautical Almanac, or are computed by the following formula, the constants of which are derived from the data in Bessel's Tabulæ Regiomontanæ, p. x.

$$\text{Annual Variation in R.A.} = 3^s{,}07046 + 1^s{,}33703 \times \text{cotan. N.P.D.} \times \text{sin R.A.}$$

Proper motions are not taken into account unless they are included in the Annual Variations adopted from the Nautical Almanac.

For facilitating the identifying of the stars, columns of approximate N.P.D. are added, and of anonymous stars the magnitudes are also mentioned. When the star is double, the component to which the R.A. applies is indicated by the letters *np*, *nf*, *sp*, *sf*, in

their usual significations, the angular positions of the stars being known from previous observations with the Northumberland Telescope. It is presumed, if the observer has not noted which star was taken, and the components are far enough apart to be seen distinctly in the Transit Telescope, that the selection has been made according to the rule in p. i. Also if the star cannot be seen double in the Transit Telescope, and one of the components is known to be considerably brighter than the other from observations with the Northumberland Telescope, the transit observation is considered to apply to the brighter. In several instances of very close components of nearly equal magnitude, no letters are affixed, and the R.A. is supposed to apply to the middle point between them. When the star is triple or multiple, the component to which the R.A. applies is mentioned in a note at the bottom of the page.

II. *Observations with the Mural Circle and Calculation of Geocentric North Polar Distances.*

The particulars of observations with the Mural Circle, and the Calculations of Geocentric North Polar Distances, are recorded in pages 88—157. The left-hand pages contain the pointer and microscope readings, with those corrections only that are required for finding the concluded circle readings: the right-hand pages exhibit, first, the apparent Zenith Distances, as deduced from the concluded circle readings, and then the Geocentric North Polar Distances of the fixed stars and centres of the moving bodies, together with the elements of the Calculations by which the latter are derived from the Apparent Zenith Distances. The following is the explanation of the contents of the separate columns.

The *first column* has the day of observation, commencing always with the Sun's passage.

The *second column* contains the name of the object observed, with letters indicating the method of observation. *R* denotes that it is observed by reflexion: *M* that it is observed with the micrometer wire. When the limb of a planet is mentioned, it is that observed with the fixed wire. The Stars are named according to the rule adopted with respect to the Transit observations. Anonymous stars are designated by their approximate mean right ascensions.

The order of the six microscopes, beginning with *A*, which is at the northern extremity of the horizontal diameter of the circle, and proceeding over the highest part of the limb, is *ACEBDF*, so that *A* and *B*, *C* and *D*, *E* and *F*, are severally at the ends of a diameter. All micrometer readings increase as the micrometer wires move *towards* the graduated micrometer-heads. The microscopes have their micrometer-heads all directed the same way relatively to the graduation of the circle: that of *A* is *downwards*. When the Telescope is horizontal and its object glass looks southward, the micrometer-head of the eye-piece micrometer is also downwards.

The *third column* gives the indication of the pointer. The divisions of the circle are $5'$ apart, and the pointer is placed *below* microscope *A* at an interval of $10^{\circ}.45'$ nearly from the zero of its reading. The graduation proceeds in the direction from the microscope to the pointer, and the pointer reading in column 3 is the degrees and minutes of that division which, in the order of graduation, comes next *before* the position of the pointer. This, as first set down, is sometimes erroneous by some multiple of $5'$; but as the error is readily detected in the computations, no notice is taken of it in the notes.

The *six succeeding columns* contain the readings of the six microscopes. The minutes which are set down in the first of these columns, are indicated by the number of indents of the comb of the microscope in the interval between the division bisected by the micrometer wire and the hole of the comb; and the seconds and fraction of a second are taken from the micrometer-head. The bisected division is that next to the hole, on the side,

as seen in the microscope, of the micrometer-head, (excepting in some instances mentioned hereafter); and as the direction of the micrometer-head from the hole of the comb is that in which the graduation proceeds, the microscope reading of A is equal to the arc between the division which gives the pointer reading of column 3, and a certain fixed point distant exactly $10^{\circ}.45'$ from the zero of the microscope reading. Consequently the microscope reading *added* to the pointer reading is an arc of the circle, commencing with the zero of its graduation and terminating at that point. If the circle were perfectly graduated, and always retained the same circular form, and if the bisections of the divisions were accurately performed, arcs for different positions of the circle, referred in this way to the same point, would be comparable with each other, though determined by only one microscope, provided also the zero of the microscope reading retained a fixed position relatively to the axis of the circle. Errors from imperfect graduation, inaccurate bisections, and deviations from the circular form, may be presumed to be corrected in a great measure by the use of six microscopes, disposed at the opposite ends of diameters, and at equal distances round the circle. It appears, however, that a residual inequality remains, of which more will be said hereafter.

The *tenth column* contains the readings of the micrometer for the objects in the second column to which the letter M is attached.

The amount of correction for reducing an observation with the micrometer wire to the fixed wire, is placed in the *eleventh column.* This correction is the difference between the micrometer reading and the reading at coincidence of the micrometer wire with the fixed wire, converted into arc by multiplying by $20'',844$, which is the arc corresponding to one revolution of the micrometer-head. The micrometer readings increase as the micrometer-wire moves in the direction from the fixed wire to the micrometer-head, which is also the direction in which the graduation of the circle proceeds. Hence the correction is positive or negative, according as the micrometer reading is less or greater than the reading at coincidence.

As the micrometer wire is not exactly parallel to the fixed wire, the coincidence readings at all the wires are observed from time to time, as well as more frequently the coincidence at the middle wire, and different values are used according to the position of the object in the field at the time of its bisection by the micrometer wire. The times of observing the coincidences are stated in the left-hand pages, and the new values with the dates from which they are used, are given in the right-hand pages, in the spaces below the columns.

The coincidences were taken monthly at the five wires, and when taken at the middle wire only, the coincidences at the other wires are inferred from the preceding or following observations of coincidences at all the wires.

When an observation is taken between two wires, the adopted coincidence is interpolated; when taken beyond the wires, an allowance for difference of coincidence is calculated at the rate of $0^{r},004$ for an interval equal to that between consecutive wires.

June 26 . 7^{h}. I observed as follows for determining the value of one revolution of the eye-piece micrometer. The micrometer wire was made to bisect a small rectangular aperture at the top of Grantchester tower. There was considerable vertical vibration.

Micrometer reading.	Pointer reading.	Microscope *A*	*B*	*C*	*D*	*E*	*F*	Correction for Runs.	Concluded Circle reading.	Difference.	Mean of consecutive differences.
r	° '	' "	"	"	"	"	"	"	° ' "	' "	' "
− 15	44 . 50	3 . 22,2	24,3	20,6	20,2	21,7	25,2	− 3,0	44 . 53 . 21,87		
+ 15	45 . 0	3 . 46,9	49,1	45,2	44,0	47,0	48,5	− 3,3	45 . 3 . 46,23	10 . 24,36	10 . 26,36
− 15	44 . 50	3 . 18,6	20,6	16,5	15,7	17,7	21,2	− 3,0	44 . 53 . 17,88	10 . 28,35	10 . 26,05
+ 15	45 . 0	3 . 42,2	44,2	39,8	39,6	42,4	44,8	− 3,3	45 . 3 . 41,62	10 . 23,74	10 . 24,70
− 15	44 . 50	3 . 16,3	18,4	14,9	14,1	16,2	18,9	− 3,0	44 . 53 . 15,97	10 . 25,65	10 . 24,86
+ 15	45 . 0	3 . 40,7	42,8	38,6	37,9	40,6	42,8	− 3,2	45 . 3 . 40,03	10 . 24,06	10 . 24,91
− 15	44 . 50	3 . 15,2	16,5	13,3	11,9	14,4	17,4	− 3,0	44 . 53 . 14,28	10 . 25,75	

The temperature was at 59°,1. The correction for Runs, the amount of which for 5′ was found immediately after the above measures to be −4″,4, is applied on a principle which will be shortly explained. The above differences are alternately less and greater than the mean of all, indicating apparently a variation of refraction, the effect of which disappears in great measure in the means of consecutive differences. The mean resulting value of one micrometer revolution is 20″,844, which is adopted.

When the observation is not made at or very near the middle wire, the distance of the place of bisection from the middle wire is expressed in the *twelfth column* in whole intervals and parts of an interval between consecutive wires, the negative or positive sign being affixed according as the bisection was made *before* or *after* passing the middle wire. The times by Molyneux of the bisection of Polaris and δ Ursæ Minoris, whenever these stars are not observed very near the true meridian, are stated in the notes at the bottom of the page.

The corrections in the *thirteenth column* serve to reduce the observation to what it would have been if taken at the middle wire, and depend, for the fixed stars, only on the curvature of their diurnal paths, but for the moving bodies both on curvature of path and on change of N.P.D. In the latter case the sum of the corrections is put in column 13. These corrections are calculated as follows.

The correction for curvature of path is obtained for Polaris and δ Ursæ Minoris by converting the time by Molyneux into time by Hardy, by means of comparisons given below the columns of the left-hand pages, and thence inferring the true sidereal time from the error of Hardy given by the transit observations. The correction is then immediately deduced from the difference of this time and the time of meridian passage given in the Nautical Almanac, by means of tables especially calculated for these two stars. For other stars, the calculation is performed by a known formula, according to which, the correction for a given distance from the middle wire varies as the tangent of declination, and for a given declination varies as the square of the distance. When the declination is 45°, the correction for one interval from the middle wire, which is traversed by an equatoreal star in 16ˢ,6*, is 0″,1503. Since in looking directly at an object between the pole and the equator, the Telescope is turned by reason of the curvature of path too far in the direction in which the graduation proceeds, the circle reading is too small, and the correction is consequently positive. The contrary is the case below the equator and below the pole. In reflexion observations, the error of position of the Telescope is in the opposite direction, and the sign of the correction is always contrary to what it is in observing directly the same objects.

The correction for change of N.P.D. is calculated in the case of the Sun and Planets, by inferring the change in the time between the instant of observation and the passage across the middle wire, from the horary variation given in the Nautical Almanac. This time is

* This value was verified by means of transits of Polaris taken on June 23, 1843.

estimated by intervals and parts of an interval between the wires, taking each interval equal to $16^s,6 \times$ sec. of declination. In observations of the Moon, an exact value of the time of passing from one wire to the next is requisite, on account of the rapid change of her N.P.D. The value employed is $16^s,6$, multiplied by the factor used for correcting to the mean of all the wires in imperfect transit observations of the Moon, the expression for which is given p. ii. The required correction is then inferred from the variation of the Moon's N.P.D. in 10^m, given in the Nautical Almanac. The sign of the correction is determined by considering that when the N.P.D. of the moving body is increasing, before it passes the middle wire the Telescope is advanced too far in the direction of the circle's graduation, and after passing, too far in the contrary direction. The circle reading requires a *plus* correction in the first case, and a *minus* correction in the other. If the N.P.D. is decreasing, the signs of the corrections are the contrary.

The microscope readings obtained in the manner stated p. xiv, are affected with an error of *Runs*, unless the micrometer wire is carried by five turns of the micrometer exactly from the image of one division to that of the next, which can very rarely happen. The corrections applied on this account are obtained in the following manner. The circle is clamped in such a position, that a division is near the zero of the microscope on the *negative* side, or that moved from the micrometer head; and this division with the adjacent one on the *positive* side of zero, is bisected. The excess of the micrometer reading for the latter above the micrometer reading for the other, with sign changed, is the quantity to be added to a micrometer reading of 5′, to correct for the inequality in question. For a less reading the correction is proportionally less. Instead of correcting for each microscope reading separately, it is sufficiently accurate and more expeditious, to add the excesses of the six microscopes together, to take a part of the sum with sign changed, bearing the same ratio to the whole as the approximate mean microscope reading to 5′, and then adding up this part with the six microscope readings, to divide the sum by 6 to obtain the corrected mean reading. The sum of the excesses with sign changed, is the "Correction for Runs" at the bottom of the right-hand pages, where also the times of commencing a new value are stated. The dates of the observations for runs are given on the opposite pages.

It sometimes happens that a division falls so near the zero of the microscope that it is uncertain whether it be on the negative or positive side. In such a case it is generally bisected, and when found to be on the negative side, the pointer reading and minutes of the microscope readings are put down for the sake of uniformity as if the division on the positive side had been bisected, but no correction, or a small negative one, is applied for runs. When this circumstance occurs it is mentioned in the notes.

The following Table exhibits the results of the observations made in 1843 for the error of Runs of the six microscopes. The Temperature in degrees of Fahrenheit is added, as the variations of Runs appear to depend in great measure on changes of Temperature.

Day of Observation 1843.	Excess of micrometer-reading for positive division above micrometer-reading for negative division, for each microscope.						Sum of Excesses.	Temperature.
	A	B	C	D	E	F		
	"	"	"	"	"	"	"	°
Jan. 7	− 0,1	− 0,3	+ 0,1	− 1,2	+ 0,2	+ 1,1	− 0,2	41
16	− 0,2	− 1,7	+ 1,7	− 1,2	− 0,5	+ 0,9	− 1,0	36
Feb. 13	− 1,3	− 1,0	+ 0,3	− 1,6	− 0,8	0,0	− 4,4	35
23	− 1,0	+ 0,5	+ 0,5	− 1,3	+ 0,8	+ 0,9	+ 0,4	46
Mar. 6	− 1,6	− 1,6	+ 0,7	− 2,7	− 0,2	+ 0,8	−4,6*	34
6	− 1,2	− 0,5	+ 0,3	− 1,6	− 0,3	+ 0,5	−2,8*	
24	0,0	+ 0,3	+ 0,5	− 1,6	− 0,4	+ 0,8	−0,4	54
Apr. 5	− 0,7	− 0,2	+ 1,4	− 0,9	− 1,2	+ 0,7	− 0,9	52
11	− 0,5	− 0,9	0,0	− 1,5	0,0	+ 0,4	− 2,5	37
17	− 0,2	− 0,4	0,0	− 0,5	− 0,1	+ 1,2	0,0	55
May 1	0,0	− 0,6	+ 1,1	− 0,2	+ 0,7	+ 1,6	+ 2,6	52
16	− 0,3	+ 0,2	+ 0,7	− 0,3	0,0	+ 1,0	+ 1,3	58
31	+ 0,8	− 0,3	+ 0,6	− 1,1	0,0	+ 1,6	+ 1,6	60
June 16	+ 0,8	+ 0,4	+ 1,3	− 1,1	+ 0,1	+ 1,0	+ 2,5	64
22	− 0,1	− 0,8	+ 1,2	− 0,9	+ 0,6	+ 1,2	+ 1,2	50
June 26	+ 0,9	+ 1,9	+ 1,2	− 0,6	0,0	+ 1,0	+ 4,4	59
July 7	+ 0,4	+ 1,0	+ 1,2	− 0,4	+ 0,8	+ 2,1	+ 5,1	63
15	+ 0,6	+ 2,0	+ 1,0	− 0,6	+ 0,7	+ 1,8	+ 5,5	63
Aug. 2	+ 1,0	0,0	+ 0,9	− 0,6	0,0	+ 1,3	+ 2,6	59
12	− 0,3	− 0,2	+ 1,2	− 0,1	0,0	+ 1,1	+ 1,7	62
23	+ 0,2	− 0,4	+ 0,6	− 0,7	+ 0,3	+ 1,3	+ 1,3	61
Sept. 2	+ 1,0	− 0,3	+ 0,9	− 0,3	+ 0,7	+ 1,6	+ 3,6	65
11	+ 0,9	0,0	− 0,3	− 0,2	− 0,4	+ 1,2	+ 1,2	64
18	0,0	− 0,8	+ 0,6	− 0,5	+ 1,0	+ 1,3	+ 1,6	67
27	− 0,2	0,0	+ 1,0	− 0,8	− 1,0	+ 1,1	+ 0,1	50
Oct. 7	+ 1,0	+ 0,5	+ 0,8	− 1,0	+ 0,2	+ 1,2	+ 2,7	60
16	− 0,2	− 0,2	+ 0,5	− 1,4	− 0,2	+ 1,0	− 0,5	44
Nov. 9	− 0,4	− 1,3	+ 0,9	− 1,1	− 0,9	+ 0,2	− 2,6	39
24	+ 0,3	− 0,9	− 0,5	− 1,4	+ 0,5	+ 1,0	− 1,0	42
Dec. 7	− 0,7	+ 0,7	+ 0,6	− 0,8	− 0,7	+ 1,3	+ 0,4	50

* In different positions of the Telescope: the mean of the results is adopted.

The concluded circle reading in the *fourteenth column* is the mean of the microscope readings with all the above corrections applied. It is, therefore, the reading of the circle, supposing the microscopes to be in accurate adjustment for runs, and the object to have been observed with the fixed wire as it passed the middle vertical wire. For Polaris and δ Ursæ Minoris the concluded reading applies to the time of meridian passage.

The *fifteenth column* contains the initial of the observer's name. The observations marked C are by myself, and those marked G by Mr Glaisher.

The mean between the two concluded readings of the reflexion and direct observations of the same star, is the reading corresponding to one or the other horizontal position of the Telescope, and, increased or diminished, as the position may require, by 90°, gives the reading when the Telescope is vertical and object-glass upwards. The seconds of the readings thus determined, which for shortness are called "zenith points," are placed in the *first column* of the *right-hand* page. As the zenith points are found to be discordant with each other, a mean zenith point is adopted for forming the zenith distances of all observations included in a certain interval, and is placed, with the date of its commencement, at the bottom of the page. The adopted zenith points have been obtained by the rule first employed in 1842. The stars observed by reflexion and directly within 15° of the zenith are divided into two groups, one north, the other south of the zenith. The mean of the zenith points of each group is supposed to correspond to the mean of the zenith distances, and from these two mean zenith points at known distances from the zenith, the zenith point corresponding to the zenith is found by interpolation, and is the adopted zenith point. If there were no cause of discordance the zenith points determined by observations at different zenith distances would all be the same; and consequently the differences between the adopted zenith point and the other zenith points, are measures of the discordance at different zenith distances from whatever cause it may arise, and furnish the means of correcting for it, as will be shewn further on.

The interval during which the same adopted zenith point is used, includes all observa-

tions in the course of which no considerable variation of the separate zenith points, distinct from the discordance above-mentioned, can be recognised. Usually they are determined by changes arising from instrumental adjustments: but it also happens that gradual changes from unknown causes make the adoption of a new zenith point necessary.

The *second column* contains the apparent zenith distance. This for a direct observation is the algebraic excess of the circle reading of column 14 above the adopted zenith point, and for a reflexion observation, the algebraic excess of the corresponding nadir point above the circle reading. The object is south or north of the zenith according as the excess is in either case positive or negative.

The four next columns contain the materials for the calculation of *refraction.* The *third column* has the height of the barometer, as shewn by a cistern-barometer constructed by Dollond, and attached to the circle pier. The lower surface of the mercury is raised by a screw pressing the bag till the light seen below a brass edge is excluded; and a brass slider is brought to the upper surface to shut out the light in the same way. The *fourth column* has the reading of the thermometer whose bulb is plunged in the cistern of the barometer.

As it appeared by a comparison of this with six other barometers, (the particulars of which are given in the Volume for 1835, p. xxxi) that its readings were too small by 0,1 inch nearly, the height immediately read from the barometer, which is that recorded in column 3, has always been increased by that quantity in calculating the refraction.

The *fifth column* contains the reading of the free thermometer. At the beginning of 1843, one of the two thermometers carried by the jointed arms at the top of the pier, that on the north side, was placed out of doors at a small distance from the north shutter-opening of the Circle room, the other retaining its position on the pier. The reading of the free thermometer throughout the year, is the reading of the *out-thermometer.* Between June 28 and July 6 the out-thermometer was fixed to a stage near the north shutter-opening at a distance of four feet from the wall of the building and nine feet from the ground, so as to be protected from radiation and the weather. After ascertaining that the indications of the two thermometers in the same positions were as nearly as possible the same, I made the following comparisons of simultaneous readings in their respective positions.

Date 1843.	Out Thermometer.	In Thermometer.	Excess of In Therm.	Date 1843.	Out Thermometer.	In Thermometer.	Excess of In Therm.	Date 1843.	Out Thermometer.	In Thermometer.	Excess of In Therm.
h	°	°	°	h	°	°	°	h	°	°	°
Jan. 2. 0	35,6	37,5	+1,9	Jan. 7. 5	38,2	40,1	+1,9	July 7. 9	56,0	57,5	+1,5
2. 2	35,2	37,4	+2,2	7. 6½	38,1	40,6	+2,5	7.10	55,6	57,2	+1,6
2. 3½	34,1	36,1	+2,0	8.23	35,3	38,0	+2,7	8. 0	66,6	63,7	−2,9
2.11¾	28,1	30,4	+2,3	9. 0	35,8	37,6	+1,8	8. 9	55,5	59,4	+3,9
2.12	28,2	30,5	+2,3					11.22	62,5	60,0	−2,5
2.13	28,2	30,8	+2,6	June 27. 0	59,9	59,5	−0,4	14. 9½	59,0	62,1	+3,1
2.14	27,8	30,1	+2,3	28. 0	55,6	55 8	+0,2	15. 0	71,4	69,7	−1,7
4.10	34,2	36,5	+2,3	28. 8½	48,7	52,5	+3,8	15. 8½	63,7	64,6	+0,9
4.11	34,2	36,5	+2,3	28. 9½	45,3	49,5	+4,2	15. 9½	61,0	62,7	+1,7
4.14	35,2	36,9	+1,7					16.22	71,4	67,7	−3,7
5. 4	36,0	37,2	+1,2	July 6. 8	61,6	63,2	+1,6	17. 0	76,2	72,7	−3,5
5.11	33,1	34,6	+1,5	6.22	64,1	62,5	−1,6	17. 8½	64,8	65,2	+0,4
5.12	33,2	34,8	+1,6								

It appears by this Table that the In-Thermometer exceeds the Out-Thermometer at all times of the day in the cold season, the mean excess being $+2^{\circ},1$. In the hot season the Out-Thermometer exceeds the In-Thermometer in the early part of the day, but generally falls below it at night. The mean for the hot season is an excess of $0^{\circ},4$, and for both seasons, an excess of $1^{\circ},2$, on the side of the In-Thermometer.

The refraction in the *sixth column* is calculated by Bessel's tables, (*Tabulæ Regiomontanæ*, p. 538, &c.) by making use of the Appendix to the *Greenwich Observations* of 1836. In this mode of calculation the reading of the attached is supposed to be the same as that of the free thermometer. The former reading, though not made use of, is inserted in the printed columns, to furnish the means of correcting, if required, for the error of this supposition.

The *seventh column* contains the parallax. If r and D be respectively the lines from the centre of the Earth to the place of observation and object observed, z the angle they make with each other, r' the Earth's equatoreal radius, D' the mean distance of the Sun from the Earth, and p the parallax, then the formula used for the Sun's limbs and for the planets is,

$$p = \frac{r}{r'} \times \frac{r'}{D'} \times \frac{D'}{D} \times \sin z.$$

Log $\frac{r}{r'}$ is taken $= 9{,}9990916$, which supposes the ratio of the Earth's axes to be that of 297 to 298; log $\frac{r'}{D'} = 0{,}9333658$, the assumed value of the Sun's equatoreal horizontal parallax at the mean distance being $8'',5776$; log $\frac{D'}{D}$ is the arithmetical complement of the log. of distance given in the Nautical Almanac; and z is found by subtracting $11'.12''$, the angle of the vertical given by the above ratio of the axes, from the observed zenith distance.

The formula used for computing the parallax of the Moon's limbs is

$$\sin p = \frac{r}{r'} \sin (P + a) \sin z,$$

where P is the equatoreal horizontal parallax, which is interpolated with second differences from the Nautical Almanac, and a is a small correction introduced by finding exactly the parallax of the limb, that is, the angle made by a tangent to the highest or lowest point of the Moon's surface, as seen from the place of observation, with a tangent to the highest or lowest point, as seen from the Earth's centre. In using the above formula, the sine is not considered equal to the arc. The other elements of the calculation are the same as for the planets.

For the calculation of a, which is dependent on the zenith distance, I must refer to the *Cambridge Observations*, Vol. iv., for 1831, p. 147. The following is a table of its values, for the North and South Limbs, and for different zenith distances.

Zenith Distance.	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°
Corr. for N.L.	$-0'',03$	$-0'',04$	$-0'',05$	$-0'',06$	$-0'',06$	$-0'',07$	$-0'',08$	$-0'',08$	$-0'',09$	$-0'',09$	$-0'',09$
Corr. for S.L.	+0,10	+0,11	+0,12	+0,12	+0,13	+0,14	+0,15	+0,15	+0,16	+0,16	+0,16

The *eighth column* contains the micrometer reading, when one limb of a planet is observed with the micrometer wire, and the other on the fixed wire.

The *ninth column* contains the semidiameters of the Sun and Moon, and those of the planets whenever they are not observed by bisecting their centres. The Sun's semidiameter is taken from pages II of the Nautical Almanac: the Moon's is interpolated with second differences from the Nautical Almanac. The apparent diameters of Mars in the vertical direction, are given by the micrometer readings of column 8, treated in the same manner

as those on the left-hand page, and the semidiameters of column 9 are found by merely halving the results. The correction of Mars's vertical diameter for defect of illumination was too small to be worth taking account of.

The geocentric N.P.D. of the centre in the *tenth column* is obtained by applying to the apparent zenith distance of column 2, the corrections for refraction, parallax, and semidiameter, and adding $37^{\circ}.47'.8'',28$, the assumed colatitude of the Observatory*. The result is, therefore, the N.P.D. of the centre of the object as viewed from the Earth's centre, at the time of passing the middle wire, affected by uncorrected instrumental errors and errors of observation, as also by any errors in the assumed values of the constants employed in the calculations. The negative sign denotes that the object was observed below the pole.

The *eleventh column* contains the corrections to be applied to the apparent N.P.D. of stars to obtain their mean N.P.D. at the beginning of the year. These corrections with their proper signs are obtained as follows.

For stars included in the list of the Nautical Almanac, the corrections are obtained by subtracting the mean from the apparent declinations of that work, the latter being found for the days of observation by interpolation. For stars not in the Nautical Almanac, but included in the Catalogue of the Royal Astronomical Society, the corrections are calculated by the formula, $Aa' + Bb' + Cc' + Dd'$, $\log A$, $\log B$, $\log C$, $\log D$, being taken from the Nautical Almanac; and $\log a'$, $\log b'$, $\log c'$, $\log d'$, from the Society's Catalogue. For stars not in that Catalogue, the corrections are calculated by the following formula, depending on the expressions for a', b', c', d', given in p. xvii. of the Preface:

$$\text{Correction} = A \times (N^{\circ}.\,log = 9{,}6375) \times sin\ N.P.D. - A\,.\,sin\ Æ\ cos\ N.P.D.$$
$$+ B\ cos\ Æ\ cos\ N.P.D. + C \times (N^{\circ}.\,log = 1{,}3020)\ cos\ Æ - D\ sin\ Æ.$$

The *Mean North Polar Distances, Jan.* 1, 1843, of the stars observed in 1843, as deduced from each day's observation, are arranged in pages 160—172. These are derived from the apparent N.P.D. by merely applying the corrections just spoken of. When the resulting mean N.P.D. is included in brackets, no use is made of it in deducing the concluded mean.

The results by the same star, when observed above and when below the pole, are arranged separately to serve for correcting the assumed colatitude. Also, the results by direct observations are separated from those by reflexion observations of the same star, for the purpose of exhibiting the effect of the discordance of zenith points before spoken of, and furnishing data for applying a correction.

A *Catalogue of the Concluded Mean North Polar Distances, Jan* 1, 1843, with the *Annual Variations*, is given in pages 173—176. The concluded mean is the mean (corrected as stated below) of all the preceding mean N.P.D.; and the annual variations are either taken from the Nautical Almanac, or are computed by the formula $-20'',0554 \times \cos$ R.A., the constant of which is derived from the *Tab. Regiomont.* p. x. Proper motions are not taken into account unless they are included in the annual variations adopted from the Nautical Almanac. For greater ease in identifying the stars, columns of their approximate mean R.A. Jan. 1, 1843 are added, and of anonymous stars the approximate magnitudes are also mentioned. The component of a double or multiple star to which the N.P.D. applies, is indicated in the manner, and according to the considerations, stated in p. xiii. with reference to the Catalogue of R.A.

The corrections applied to the mean of all the different determinations of mean N.P.D.,

* In one instance, viz. on Nov. 6, a correction has been applied to the geocentric N.P.D. of the Moon for defect of illumination of the Limb. The amount, which is stated in the notes, was obtained by using a celestial globe in the manner explained in p. xxvi of the Introduction to the Volume for 1835.

to obtain the concluded mean, are for error of assumed colatitude and for discordance of zenith points. The former correction is derived from a new determination of the colatitude of the Observatory, calculated from all the observations of the same stars above and below pole which were made in the years 1836, 1837 and 1838. The calculation is given in pages liii—lviii of the Introduction to the Volume of 1838, and the result is, that the assumed colatitude $37^{\circ}.47'.8'',28$ should be corrected by $+0'',09$. This quantity is accordingly added algebraically to the mean N.P.D., considering them negative when the observations are below the pole.

The correction for discordance of zenith points is applied on the following principle. The discordance is of such a nature, that the circle reading for zenith point is in general less by a star observed south of the zenith than by a star observed north of the zenith. Apparently when the object-glass is to the south of zenith, the Telescope, whether directed to the heavens or the trough of mercury, requires to be turned for bisecting an object, a little farther in the direction of the graduation, than if the cause of inequality did not exist; and when the object-glass is to the north of zenith, a little in the contrary direction. Whatever may be the cause of the discordance, the error it produces may be presumed to be corrected by reducing the different zenith points to the zenith point corresponding to a *given* zenith distance. Hence, if M be the zenith point adopted according to the rule explained in page xviii, and Z the zenith point resulting from a particular double observation south of zenith, $M-Z$ is the error of the circle reading in defect, both for the reflexion and the direct observation, supposing both to be equally affected by the inequality. By this quantity the N.P.D. is too small as determined by the direct observation, and too great as determined by the reflexion observation; so that the excess of the latter determination above the other is twice $M-Z$. These inferences apply to observations north of the zenith, by taking $M-Z$ a negative quantity when Z is greater than M, and the N.P.D. negative when the star is observed below the pole. The following table exhibits for each star observed directly and by reflexion, the mean value of $M-Z$, derived from the lists in pages 160—172, by halving the algebraic excess of the mean of the N.P.D. by reflexion above the mean of the corresponding N.P.D. by direct vision.

Mean excess for each Star of the adopted Zenith Point above the Zenith Points given by Observation in 1843.

Star's Name.	Zen. Dist.	No. of Obs.	Mean of M–Z.	Star's Name.	Zen. Dist.	No. of Obs.	Mean of M—Z.
	° ′		″		° ′		″
β Cassiopeiæ SP....	– 69 . 30	1	+ 1,94	55 Camelopardali...	– 16 . 43	2	– 0,29
η Draconis SP.......	65 . 55	1	+ 1,89	ρ Draconis..........	15 . 13	1	– 0,20
α Cephei SP.........	65 . 52	1	+ 0,11	α Camelopardali....	13 . 51	1	+ 0,06
ι Cephei SP..........	62 . 25	1	– 0,25	h Draconis..........	13 . 10	4	– 0,26
ρ Draconis SP.......	60 . 22	1	+ 0,53	α Draconis..........	12 . 55	1	– 1,03
				g Draconis..........	12 . 41	1	– 0,81
β Ursæ Min. SP....	53 . 0	2	+ 1,30				
γ Cephei SP..........	51 . 2	3	+ 0,75	α Ursæ Majoris......	10 . 23	17	– 0,49
ζ Ursæ Minoris SP.	49 . 31	3	+ 0,40	η Draconis............	9 . 39	3	– 0,15
				a Lyncis.	9 . 20	5	– 0,67
δ Ursæ Minoris SP.	41 . 11	4	– 0,61	η Cephei.............	9 . 2	4	– 0,38
Polaris SP............	39 . 18	18	– 1,01	o Ursæ Majoris......	9 . 1	3	– 0,58
λ Ursæ Minoris SP.	38 . 57	1	+ 0,26	ν Cephei.............	8 . 11	2	– 0,30
Polaris	36 . 16	17	– 0,92	31 Camelopardali...	7 . 38	1	+ 0,47
δ Ursæ Minoris......	34 . 23	22	– 0,84	υ Ursæ Majoris......	7 . 33	1	– 0,63
ε Ursæ Minoris......	30 . 4	2	– 1,08	o Draconis..........	6 . 59	5	+ 0,13
				θ Draconis...........	6 . 46	2	+ 0,39
β Ursæ Minoris	– 22 . 35	8	– 0,56	15 Lyncis	6 . 24	1	+ 0,38
				δ Ursæ Majoris......	5 . 41	3	– 0,85
				ζ Cephei.............	– 5 . 13	2	– 0,53

Star's Name.	Zen. Dist.	No. of Obs.	Mean of M—Z.
	° ′		″
ξ Draconis	−4 . 41	4	−0,69
n Draconis	4 . 23	2	−0,80
ϵ Cephei	4 . 3	1	−1,06
α Cassiopeiæ	3 . 28	8	−0,25
η Persei	3 . 2	1	−0,10
9 Persei	2 . 55	1	−0,91
γ Ursæ Majoris	−2 . 21	6	−0,04
η Ursæ Majoris	+2 . 7	3	+1,63
θ Cygni	2 . 21	2	+0,06
α Persei	2 . 55	10	+0,19
ι Ursæ Majoris	3 . 34	3	−0,05
π^2 Cygni	3 . 37	1	+0,74
θ Persei	3 . 39	1	−0,43
ω^2 Cygni	3 . 47	1	+0,17
μ Persei	4 . 12	3	−0,20
51 Andromedæ	4 . 22	2	+0,77
ψ Persei	4 . 33	1	+0,19
σ Persei	4 . 46	2	−0,62
δ Persei	4 . 56	1	+0,06
τ Herculis	5 . 31	3	+0,08
52 Herculis	5 . 57	4	+0,39
ι Herculis	6 . 7	1	+0,18
Capella	6 . 23	17	+0,49
ψ Andromedæ	6 . 39	1	−0,73
ψ Ursæ Majoris	6 . 52	5	+0,56
β Aurigæ	7 . 17	4	+1,04
δ Cygni	7 . 27	7	+0,40
α Cygni	7 . 29	17	+0,29
ξ Andromedæ	7 . 30	1	−0,54
λ Ursæ Majoris	8 . 31	4	+0,52
ϵ Aurigæ	8 . 38	3	+0,28
γ Andromedæ	10 . 38	1	+0,12
η Aurigæ	11 . 12	2	+0,02
γ Bootis	13 . 13	2	+0,64
α Lyræ	13 . 34	28	+0,60
61^1 Cygni	14 . 13	12	+0,27
β Lyræ	19 . 2	2	+1,10
ι Aurigæ	19 . 18	1	+0,40
Castor	19 . 59	6	+0,33
ζ Herculis	20 . 19	1	+1,12
ζ Cygni	22 . 37	2	+0,53
β Tauri	23 . 45	3	+1,07
Pollux	23 . 49	2	+1,49
α Andromedæ	23 . 59	2	+0,17
ϵ Bootis	24 . 29	1	−0,07
α Coronæ Borealis	24 . 58	4	+1,12
ϵ Leonis	27 . 43	4	+0,69
η Tauri	28 . 36	1	+0,22
α Arietis	29 . 30	3	+0,05
δ Geminorum	29 . 57	3	+0,22
δ Leonis	+30 . 50	10	+0,83

Star's Name.	Zen. Dist.	No. of Obs.	Mean of M—Z.
	° ′		″
Arcturus	+32 . 13	5	+1,02
η Bootis	33 . 2	3	+1,76
δ^1 Tauri	35 . 2	1	−0,34
Aldebaran	36 . 1	3	+0,78
β Leonis	36 . 46	2	+1,19
γ Tauri	36 . 58	1	−1,14
α Herculis	37 . 38	5	+0,63
η Piscium	37 . 40	1	−0,87
α Pegasi	37 . 51	1	+0,35
γ Pegasi	37 . 54	2	+0,13
Regulus	39 . 29	2	−0,36
α Ophiuchi	39 . 32	4	−0,30
λ Tauri	40 . 10	1	+0,02
γ Aquilæ	41 . 58	3	+0,35
β Cancri	42 . 33	1	−0,82
κ Ophiuchi	42 . 35	2	+0,83
o Virginis	42 . 37	2	+0,10
ϵ Pegasi	43 . 3	2	+0,32
α Aquilæ	43 . 45	1	+0,13
ϵ Piscium	45 . 10	1	+0,21
ϵ Hydræ	45 . 14	5	+0,35
β Aquilæ	46 . 11	1	+0,69
Procyon	46 . 36	5	+0,46
α Equulei	47 . 36	4	−0,32
α Ceti	48 . 44	2	−0,77
γ Ophiuchi	49 . 26	1	+0,04
γ Ceti	49 . 38	1	+0,46
70 Ophiuchi	49 . 40	1	−0,42
η Virginis	52 . 1	1	+0,34
ζ Virginis	52 . 1	1	+1,55
δ Ceti	52 . 34	1	+0,36
γ Virginis	52 . 48	1	−0,58
ζ Cephei	53 . 2	2	−0,53
α Aquarii	53 . 17	1	+0,02
η Serpentis	55 . 9	1	+0,28
β Eridani	57 . 31	3	−0,48
β Aquarii	58 . 28	4	+0,56
β Libræ	61 . 1	2	+0,98
ϵ Aquarii	62 . 17	1	+0,66
α^1 Capricorni	65 . 12	7	+0,11
α^2 Capricorni	65 . 14	7	+0,34
ι Aquarii	66 . 50	1	+1,59
α^1 Libræ	67 . 34	2	+0,67
α^2 Libræ	67 . 36	2	+1,19
δ Corvi	67 . 52	1	+1,13
μ Hydræ	68 . 15	2	+0,88
β Canis Majoris	70 . 6	1	+0,53
β Ceti	71 . 3	1	+0,76
β^1 Scorpii	71 . 35	2	+1,46
ξ Ophiuchi	73 . 9	1	+0,55
π Sagittarii	+73 . 29	9	+0,65

From the preceding table, the one subjoined of corrections to be applied to N.P.D. observed directly, was deduced as follows. The above mean values of $M-Z$ were divided into groups the limits of which, (indicated by the lines across,) were chosen so that the stars of each group do not greatly differ in zenith distance. Each mean value in the group was multiplied by the number of observations by which it was determined, and the corresponding zenith distance by the same number. The sum of each series of products being divided by the whole number of observations in the group, the resulting value of $M-Z$ was considered to belong to the resulting zenith distance. A line of abscissæ was then

drawn on which these zenith distances were set off, and the corresponding values of $M-Z$ being taken for ordinates, a curve was traced by hand among the points thus determined, so as to approach nearer to any point, the greater the number of observation by which its position was assigned. Ordinates of this curve were then measured at intervals of 5^0, and the measures with the corresponding N.P.D. tabulated as follows, to serve for correcting by interpolation at any proposed N.P.D. From what has been already said, the sign of the correction for a direct observation is the same as that of $M-Z$, or the ordinate of the curve.

Corrections for Discordance of Zenith Points, to be added algebraically to N.P.D. by direct Observations, 1843.

N.P.D.	Correction.	N.P.D.	Correction.	N.P.D.	Correction.
°	"	°	"	°	"
− 40	+ 1,00	+ 15	− 0,79	+ 70	+ 0,63
35	+ 0,98	20	− 0,67	75	+ 0,41
30	+ 0,95	25	− 0,54	80	+ 0,07
25	+ 0,91	30	− 0,38	85	+ 0,06
20	+ 0,84	35	− 0,16	90	+ 0,11
15	+ 0,69	40	+ 0,15	95	+ 0,24
10	+ 0,19	45	+ 0,40	100	+ 0,41
− 5	− 0,63	50	+ 0,55	105	+ 0,62
0	− 0,85	55	+ 0,62	110	+ 0,77
+ 5	− 0,91	60	+ 0,66	115	+ 0,84
+ 10	− 0,88	+ 65	+ 0,67	+ 120	+ 0,86

The corrections to N.P.D. obtained by reflexion observations are the same with contrary signs.

The *Sidereal Intervals occupied by transits of the Diameters of the Sun, Moon, and Mars,* from the Transit observations; and their *Vertical Diameters* from the Circle observations, *compared with the Nautical Almanac,* are collected in pages 178—180.

The Sidereal Intervals are the differences of the concluded transits of the first and second limbs over the mean of the seven wires. In the two instances in which both Limbs of the Moon were observed, no corrections were required for defect of illumination.

The Sidereal Interval for Mars is converted into a measure of the Diameter by the factor $15 \times \frac{3600}{3600+I} \times \cos.\,\text{decl.}$, I being his hourly motion in R.A. From this measure of the Diameter (Δ), which is affected by deficiency of illumination, the true Diameter (D) is deduced by the formulæ $\sin\theta = e\sin\phi$ and $D = \Delta\sec^2\frac{\theta}{2}$, in which e is the sine of the angle subtended at Mars by the Earth's radius vector, and ϕ is the angle PMS in the spherical triangle having the pole of the heavens (P), the Sun (S), and Mars (M) at its angular points. In obtaining these formulæ Mars is assumed to be on the Ecliptic.

The Vertical Diameters of the Sun and Moon by observation, are the differences of the zenith distances, corrected for refraction and parallax, of the North and South limbs, deficiency of illumination being allowed for in the case of the Moon, (see page xxi). Consequently they are true geocentric diameters, the effect of applying these corrections to the limbs being to reduce their places to those in which they would be seen from the Earth's centre. The Vertical Diameters of Mars are the diameters measured in the manner stated in p. xx.

The tabular intervals occupied by the transits of diameters, and the tabular diameters, are taken from the Nautical Almanac: the Moon's diameter is interpolated with second differences.

The differences between the observed and the tabular values of the intervals of transit and vertical diameters are exhibited for the purpose of obtaining corrections to the diameters if required. In the instance of the Moon the tabular error of the interval of transit is converted into error of diameter in arc by assuming the latter to have the same ratio to the Moon's semidiameter, as the former has to the sidereal time occupied by the transit of the semidiameter.

III. *Right Ascensions and North Polar Distances of the Centres of the Sun, Moon, and Planets, observed in the year* 1843, *with the Greenwich Mean Solar Times of transit of centre.*

The concluded Right Ascensions and North Polar Distances of the Sun, Moon, Mars, Vesta, Juno, and Ceres, contained in pages 182—187, are deduced from the Apparent R.A. and Geocentric N.P.D. in the foregoing part of the work, by applying certain corrections, of which an explanation will now be given.

The only corrections applied to the *Apparent Right Ascensions* are those for reducing observations of limbs to observations of centres. It is to be understood that both limbs were taken unless one is mentioned under the head of 'Limb observed,' and that the concluded R.A. of centre is the mean of the observed R.A. of the Limbs.

When one Limb of the *Sun* is observed, the R.A. of centre is inferred from the observed R.A. of the Limb, by applying the sidereal time occupied by the transit of the semidiameter as given in the Nautical Almanac.

The Right Ascension of the *Moon* at the time of transit of centre is deduced from the observed R.A. of the limb by applying the sidereal time occupied by the transit of the semidiameter, taken, first, from the section of Moon-culminating stars in the Nautical Almanac, and then corrected for an error in the Moon's Tabular semidiameter of 2″,21 in defect.

The correction +2″,21 of the Moon's tabular semidiameter was obtained in the Introduction to the Volume for 1842, (p. xxxviii) from observations extending from 1836 to 1842. The correction in time applied to the tabular interval of transit of semidiameter has to that interval, the ratio of 2″,21 to the tabular semidiameter.

The R.A. of the centre of *Mars* was deduced from the observed R.A. of the limb, by applying the tabular sidereal interval of transit of semidiameter. The R.A. of *the other Planets* are those given immediately by observation.

The *North Polar Distance of Centre* from observation is deduced from column 10 of the pages containing the *Calculation of Geocentric* N.P.D., by correcting the N.P.D. of that column, or, in the instances of the Sun and Moon, the mean of the different values on each day, for error of colatitude and discordance of zenith points.

For the Moon there are also applied, the correction +2″,31* for defect of tabular semidiameter, and a correction for alteration in the assumed value of the Equatoreal Horizontal Parallax. This value, deduced by Professor Henderson from observations made at the Cape of Good Hope, and at Greenwich and Cambridge, in 1832 and 1833, (Mem. Ast. Society, Vol. X.) exceeds by +1″,3 the value 57′. 0″,5 used in the Nautical Almanac. The correction to the N.P.D. is consequently obtained by multiplying the parallax computed as stated in p. xx, by the factor −0,00038.

An additional correction, sensible only for the Moon, has been applied for the position of the circle. The N.P.D. by the observation is that for the time of passing the middle wire; and as this time does not in general coincide with the meridian passage, a correction is required for the change of the Moon's N.P.D. in the interval. By transits of known stars observed with the Circle and Molyneux, and referred by comparison of clocks to Hardy, the intervals between the meridian passage and the passage across the mean

* This value, used in 1842, was inadvertently continued in the place of the new determination +2″,21.

of the wires, were formed for various polar distances, whence by the intervention of graphical construction, the intervals corresponding to the Moon's N.P.D. at the times of observation were inferred. The variations of N.P.D. in these intervals were then calculated from the variations for 10^m in the hourly ephemeris of the Nautical Almanac, and applied as corrections to the observed N.P.D.

The following are the names and approximate N.P.D. of the stars observed in 1843 for the position of the Circle: together with the calculated excesses of the observed times of transit across the mean of the wires above the times of meridian transit.

Transits for the position of the Circle in 1843.

Day of Observation 1843.	Star.	Approximate N.P.D.	Interval from meridian to mean wires.	Day of Observation 1843.	Star.	Approximate N.P.D.	Interval from meridian to mean wires.
		° ′	s.			° ′	s.
Mar. 25	α Hydræ.........	97 . 59	+ 1,97	June 3	β Libræ..........	98 . 48	+ 2,07
...	ε Leonis..........	65 . 30	+ 3,47	5	α Serpentis......	83 . 5	+ 2,84
				...	Antares...........	116 . 5	+ 0,96
Apr. 18	δ Leonis	68 . 37	+ 3,24	6	Arcturus..........	70 . 0	+ 3,43
...	δ Hydræ et Crat.	103 . 56	+ 1,69	...	ε Bootis...........	62 . 16	+ 3,81
20	δ Orionis.........	89 . 35	+ 2,26	10	Antares...........	116 . 5	+ 0,62
...	ε Orionis.........	91 . 18	+ 2,14	14	Rigel..............	98 . 23	+ 2,16
21	δ Leonis	68 . 37	+ 3,51	15	Procyon..........	84 . 23	+ 2,62
...	δ Hydræ et Crat.	103 . 56	+ 1,81	...	Pollux	61 . 36	+ 3,91
				...	Arcturus..........	70 . 0	+ 3,47
May 4	δ Leonis..........	68 . 37	+ 3,60	...	δ Ophiuchi.......	93 . 17	+ 2,43
...	δ Hydræ et Crat.	103 . 56	+ 1,86	...	Aldebaran........	73 . 49	+ 3,09
10	δ Leonis..........	68 . 37	+ 3,33				
...	δ Hydræ et Crat.	103 . 56	+ 1,42	23	Polaris SP.	− 1 . 32	− 12,22
13	δ Hydræ et Crat.	103 . 56	+ 1,55	25	θ Ursæ Majoris.	37 . 37	− 0,05
...	α Serpentis.......	83 . 5	+ 2,71				
...	β^1 Scorpii.........	109 . 22	+ 1,40	Dec. 6	α Andromedæ...	61 . 47	+ 0,62
...	δ Ophiuchi	93 . 17	+ 2,21	...	γ Pegasi..........	75 . 41	+ 0,67
20	Castor	57 . 46	+ 3,78	...	β Ceti	108 . 51	+ 0,92
...	Pollux	61 . 36	+ 3,65	...	γ Ceti.............	87 . 26	+ 0,84
				20	Arcturus.........	70 . 0	− 0,10
June 1	α Herculis	75 . 26	+ 3,25				

The following mean results were derived by graphical construction from the observations in the first half of the year.

North Polar Distance.	Interval from meridian transit to transit across the mean of the wires.
°	s.
60	+ 3,84
70	+ 3,43
80	+ 2,90
90	+ 2,45
100	+ 1,91
110	+ 1,32
120	+ 0,60

The Circle was taken from the wall on June 23, and on replacing it, the axis was adjusted to horizontality by the plumb line and Ramsden's ghost apparatus. I then took on the same day a transit of Polaris SP., and on June 25, a transit of θ Ursæ Majoris, for the purpose of determining approximately the collimation and meridian errors, the latter star passing very nearly in the zenith of the observatory. If c be the collimation error and z the meridian error, the two observations furnish the following equations:

$$- 0{,}05 = + 0{,}084 \times c$$

$$- 12{,}22 = + 2{,}499 \times c - 1{,}583 \times z,$$

from which $c = -0'',60$ and $z = +6'',77$. By this latter quantity the West end of the axis was too much to the South. On June 26, I corrected for meridian error by moving the spike upward through $0^r,043$ nearly. The collimation error was left unaltered. The Circle was considered to be in this manner so nearly adjusted, that no calculation of corrections of the Moon's N.P.D. for position of the Circle was made for the latter half of the year.

The *Greenwich Mean Solar Time* of transit of Centre, corresponding to the Right Ascension of centre from observation, is found by adding to the equivalent, in solar time, of the sidereal time, the next preceding mean time of transit of the first point of Aries, diminished by $23^s,48$, as the Cambridge Observatory is $23^s,54$ east of the Greenwich Observatory. For greater expedition the *seconds* of the Greenwich Mean Solar Time are found by adding together $36^s,52$, $(= 60^s - 23^s,48)$, the seconds of the mean time of transit of the first point of Aries, and the seconds of the solar equivalents, the hours and minutes being extracted from the approximate mean times of meridian passage in the Nautical Almanac.

When a Circle observation is not accompanied by a Transit observation, the Greenwich Mean Solar Time is calculated from the R.A. of centre at meridian transit in the Nautical Almanac, corrected for Tabular error of R.A., and also for the difference of longitude of the Greenwich and Cambridge Observatories by subtracting $0,00654 \times$ the horary variation of R.A. given in that work. For Juno, on Sep. 20, the Greenwich Mean Solar Time was obtained by interpolation from those of Sep. 16, 22, and 23. On Oct. 18 and 19, the R.A. from which the Greenwich Mean Solar Times were calculated, were deduced from those of Oct. 13 and 16, by means of the approximate Ephemeris of the Nautical Almanac.

The *seconds of tabular R.A. and N.P.D.*, from which the *Errors of Tables* are deduced, have been obtained for the Sun and Planets, by subtracting from the R.A. and N.P.D. at meridian transit in the Nautical Almanac, $0,00654 \times$ the horary variations in R.A. and N.P.D.

The seconds of tabular R.A. of the Moon's centre have been derived from the R.A. of the Limb in the Section of Moon-culminating stars in the Nautical Almanac, by applying the sidereal time occupied by the transit of the semidiameter as there given, and subtracting $0,00654 \times$ the variation of R.A. for 1^h of longitude. The seconds of tabular N.P.D. of centre have also been obtained from the Section of Moon-culminating stars, by adding $0,00654 \times$ the variation of declination in 1^h of longitude.

The *Determination of the Position of the Ecliptic and of the mean error of the assumed Right Ascensions of the Fundamental Stars from the Circle Observations of the Sun in* 1843, in pages 188 and 189, has been inserted to give the means of inferring absolute errors of the Solar, Lunar, and Planetary Tables from the observations of this Volume. The calculations have been made on the following principles.

The true longitude λ, and true North Polar Distance Δ, of the Sun's centre, and the true obliquity I, at any instant, are related to each other by the equation,

$$\cos \Delta = \sin \lambda \sin I,$$

and the tabular longitude $\lambda + \delta\lambda$, the tabular North Polar Distance $\Delta + \delta\Delta$, and the assumed obliquity $I + \delta I$, in the Nautical Almanac, for the same instant, by the equation,

$$\cos(\Delta + \delta\Delta) = \sin(\lambda + \delta\lambda) \sin(I + \delta I).$$

Hence neglecting powers of the errors $\delta\lambda$, $\delta\Delta$, δI, above the first,

$$\delta\Delta + \operatorname{cosec}\Delta \cos\lambda \sin I\,\delta\lambda + \operatorname{cosec}\Delta \sin\lambda \cos I\,\delta I = 0 \ldots\ldots\ldots\ldots (A).$$

Now it is assumed that the variations of λ and I in the course of a year are in accordance with the theoretical calculations, and consequently that their values, as given in the Nautical Almanac, are affected, if by any, by constant errors, which it is proposed to find.

The actual errors of the Solar Tables in N.P.D. cannot be immediately derived from the errors in the columns of pages 182 and 183, because, though mere errors of observation may be supposed eliminated in the mean result from a large number of observations, there may still remain uncorrected instrumental errors and errors of reduction. Representing therefore by α any error in N.P.D. taken from those columns, and by p the excess of the observed above the true N.P.D., we shall have,

$$\delta\Delta = (\text{Tabular N.P.D.} - \text{observed N.P.D.}) + (\text{observed N.P.D.} - \text{true N.P.D.}) = \alpha + p;$$

and as we are ignorant of the causes to which p may be owing, it is assumed to be constant within the limits of the tropics. The formula (1) in page 188 is obtained by putting m for $\sin I\delta\lambda$, n for $\cos I\delta I$, and $\alpha + p$ for $\delta\Delta$ in equation (A).

Instead of forming a separate equation from this formula for every different value of α the whole number of observations is divided into twelve groups, the mean of the values of α in each group is considered to correspond to the day nearest the numerical mean of the days of observation in the group, and λ and Δ are taken for the mean noon of the mean day from the Nautical Almanac. In this manner twelve different equations were formed. The rest of the calculation for finding m, n, and p, requires no explanation additional to that given in p. 189.

Let δR represent the mean excess for the year of the Sun's tabular R.A. above the true; let β be the mean error of the tables in R.A. as derived from the columns of pages 182 and 183; and suppose the mean excess of the assumed R.A. of the fundamental stars above the true to be q. Then,

$$\delta R = (\text{Tabular R.A.} - \text{observed R.A.}) + (\text{observed R.A.} - \text{true R.A.}) = \beta + q;$$

and as δR is known from the equation $m = \sin I\delta\lambda$, q is also determined.

Occultations of fixed stars by the Moon, and Calculation of the Occultations in pages 193—201.

The sidereal times of the occultations were derived from the noted times by the comparisons in page 192, and the Greenwich Mean Solar Times were calculated in the usual manner. For the Calculation of the Occultations, the Geocentric R.A. and N.P.D. of the Moon's centre, the Horizontal Equatoreal Parallax, and the Geocentric Semidiameter, were interpolated for the time of observation with second differences from the Nautical Almanac; and the assumed R.A. and N.P.D. of the stars were taken from the same work. The Moon's apparent R.A., N.P.D., and semidiameter, the apparent distance of the Star from the Moon's centre, and the coefficients of small variations, were calculated by the formulæ given in pages xxxiii and xxxiv of Vol. XIII.

The *Hourly Meteorological Observations* at the Summer Solstice, Autumnal Equinox and Winter Solstice, (pages 202—204) were taken in conformity with the notice circulated by Sir J. Herschel in 1835. The Barometer readings have been corrected by $+0^{\text{in}},100$.

All the observations in this Volume were originally recorded in pencil writing in small memorandum books, which are carefully preserved for future reference.

TRANSITS AS OBSERVED,

AND

CALCULATION

OF THE

APPARENT RIGHT ASCENSIONS.

1843.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Jan. 1	δ Ursæ Minoris...	......	......	......	22.21,4	26. 8,2	29.53,7	18 . 33 . 40,3	– 5 . 40,23	18 . 22 . 20,67	C.
Jan. 2	☉ 1 L.	56,2	10,8	25,3	40,2	54,8	9,5	18 . 49 . 24,2		18 . 48 . 40,14	C.
	☉ 2 L.	18,0	32,8	47,2	2,2	16,9	31,4	18 . 51 . 46,0		18 . 51 . 2,07	C.
	(a) α Aquilæ.........	11,8	......	......	52,5	6,4	19,7	19 . 43 . 33,4	– 8,19	19 . 42 . 52,57	C.
	(b) β Aquilæ.........	40,7	54,3	7,7	21,5	35,0	48,4	19 . 48 . 2,1		19 . 47 . 21,38	C.
	(c) Aldebaran........	1,2	15,1	29,2	43,3	57,2	11,2	4 . 27 . 25,2		4 . 26 . 43,20	C.
	δ Ursæ Minoris SP.	......	14.31,0	18.16,4	22. 5,4	25.55,2	29.37,3	6..........	– 0,02	6 . 22 . 5,04	C.
	(d) Σ 1083. *sp*........	23,8	38,2	52,3	7,1	21,4	35,7	7 . 16 . 50,2		7 . 16 . 6,96	C.
	(c) Pollux	44,6	0,2	15,3	30,8	46,2	1,4	7 . 36 . 16,5		7 . 35 . 30,71	C.
	(e) Ceres............	36,7	52,0	7,1	22,6	38,0	......	8 . 48	+ 15,27	8 . 48 . 22,55	C.
Jan. 4	Rigel............	6,8	20,5	34,0	47,7	1,3	14,8	5 . 7 . 28,5		5 . 6 . 47,66	C.
	β Tauri	......	40,4	55,5	11,2	26,5	41,3	5 . 16 . 56,9	– 7,65	5 . 16 . 10,98	C.
	θ^1 Orionis........	40,6	54,2	7,5	21,2	34,9	48,2	5 . 28 . 1,8		5 . 27 . 21,20	C.
	α Orionis.........	48,1	1,6	15,0	28,7	42,4	55,8	5 . 47 . 9,4		5 . 46 . 28,72	C.
	Σ 840. *np*.........	53,0	6,8	20,3	34,2	48,0	1,6	5 . 58 . 15,3		5 . 57 . 34,17	C.
	(f) Ceres............	17,3	32,7	47,9	3,3	18,7	......	8 . 47	+ 15,30	8 . 47 . 3,28	C.
Jan. 5	(b) β Aquarii........	......	36,2	49,6	3,3	16,9	30,4	21 . 23 . 44,0	– 6,77	21 . 23 . 3,30	C.
	α Aquarii.........	48,7	2,2	15,5	29,1	42,6	56,0	21 . 58 . 9,5		21 . 57 . 29,09	C.
	☽ 1 L..............	40,3	54,2	7,7	21,8	35,7	49,4	22 . 39 . 3,2		22 . 38 . 21,75	C.
	α Pegasi..........	1,3	15,3	29,0	43,1	57,1	10,8	22 . 57 . 24,7		22 . 56 . 43,04	C.
	γ Piscium	7,5	21,0	34,3	47,8	1,6	15,0	23 . 9 . 28,5		23 . 8 . 47,96	C.
Jan. 7	(g) ι Piscium.........	58,4	12,3	25,4	39,2	52,6	6,2	23 . 32 . 19,8		23 . 31 . 39,13	C.
	ω Piscium........	21,2	34,7	48,1	2,0	15,4	28,9	23 . 51 . 42,5		23 . 51 . 1,83	C.
	α Andromedæ....	18,1	33,4	48,3	3,6	19,2	34,4	0 . 0 . 49,7		0 . 0 . 3,81	C.
	☽ 1 L............	13,7	27,7	41,3	55,3	9,3	22,8	0 . 7 . 36,7		0 . 6 . 55,26	C.
	(h) δ Piscium	38,9	52,3	5,7	19,3	33,2	46,5	0 . 41 . 0,2		0 . 40 . 19,45	C.
	Polaris M.........	0.56,5	1.41,3	2.24,5	3. 8,7	3.50,2	4.32,5	1 . 5 . 15,0	– 1,42	1 . 3 . 5,54	C.
	α Arietis.........	24,1	38,6	53,2	7,9	22,5	37,1	1 . 58 . 51,7		1 . 58 . 7,87	C.
	α Ceti	12,1	25,6	38,7	52,5	6,1	19,5	2 . 54 . 33,1		2 . 53 . 52,51	C.
Jan. 8	(i) α Herculis........	33,7	47,8	1,5	15,6	29,6	43,3	17 . 7 . 57,3		17 . 7 . 15,54	C.
	α Ophiuchi.......	43,5	57,5	11,0	25,0	38,7	52,6	17 . 28 . 6,4		17 . 27 . 24,96	C.
	(k) δ Ursæ Minoris...	10.59,6	14.48,8	18.31,0	......	......	......	18.........	+ 7 . 33,54	18 . 22 . 20,01	C.
Jan. 9	☉ 1 L.	41,2	55,9	10,3	25,3	39,6	54,2	19 . 20 . 8,8		19 . 19 . 25,04	C.
	☉ 2 L.	2,3	17,0	31,3	46,1	0,7	15,2	19 . 22 . 29,9		19 . 21 . 46,07	C.
	(l) δ Ursæ Minoris SP.	......	......	......	22. 4,4	25.54,5	29.36,5	6 . 33 . 26,0	– 5 . 40,28	6 . 22 . 5,07	C.
	(m) δ Ursæ Min. SP. M.	......	......	......	22. 4,4	22.42,7	23.21,0	6 . 24 . 0,4	– 58,00 + 0,64	6 . 22 . 4,76	C.
	α Herculis........	33,7	47,9	1,7	15,7	29,8	43,4	17 . 7 . 57,1		17 . 7 . 15,61	G.
Jan. 10	☉ 1 L.	2,8	17,3	31,8	46,6	1,1	15,8	19 . 24 . 30,2		19 . 23 . 46,52	G.
	(n) ☉ 2 L.	23,8	38,2	52,8	7,5	22,1	36,6	19 . 26 . 51,2		19 . 26 . 7,46	G.
	α Aquilæ	12,6	26,1	39,8	53,5	7,1	20,5	19 . 43 . 34,2		19 . 42 . 53,40	G.
	(o) α Arietis.........	24,2	39,0	53,2	8,1	22,7	37,3	1 . 58 . 51,9		1 . 58 . 8,06	G.
	θ^1 Arietis.........	......	......	57,3	12,2	26,3	40,6	2 . 9 . 55,0	– 14,24	2 . 9 . 12,04	G.
	(p) Rigel............	7,2	21,0	34,3	48,2	2,0	15,3	5 . 7 . 29,1		5 . 6 . 48,16	G.
	β Tauri	25,5	41,0	56,0	11,7	26,9	42,1	5 . 16 . 57,3		5 . 16 . 11,50	G.
	Ceres............	44,9	0,4	15,8	31,2	46,8	......	8 . 42	+ 15,42	8 . 42 . 31,24	G.
Jan. 11	Ceres............	55,1	10,7	26,0	41,8	57,1	......	8 . 41	+ 15,44	8 . 41 . 41,58	G.
Jan. 12	η Tauri...........	14,6	29,3	43,9	58,7	13,4	28,1	3 . 38 . 42,7		3 . 37 . 58,67	G.
	A^1 Tauri.........	30,8	45,5	59,6	14,2	29,0	43,5	3 . 55 . 57,9		3 . 55 . 14,36	G.
	(q) ☽ 1 L............	37,9	53,1	8,2	23,6	38,9	53,9	4 . 22 . 9,0		4 . 21 . 23,51	G.
	Aldebaran........	2,1	16,0	30,0	44,1	58,4	12,0	4 . 27 . 26,1		4 . 26 . 44,10	G.
	ι Tauri	48,9	3,4	17,5	32,2	46,9	1,1	4 . 54 . 15,7		4 . 53 . 32,24	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Very cloudy and uncertain. (b) Faint. (c) Flaring. (d) The observation has been increased 1s for error in counting. (e) Wire II. was set down 53,0. (f) Bad lamp-light. (g) Hurried at first two wires. (h) Misty. (i) Both stars seen two hours before noon. (k) Misty cloud prevented taking more wires. (l) Wires V. and VI. doubtful from clouds. (m) By trial 9 revolutions of the micrometer was found to correspond to 174s. The correction –58s,00 to the middle wire has been calculated accordingly. (n) The wind noisy. (o) Clouded, but the observation was good. (p) Field badly illumined. (q) Great vibration.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
- 0,50	- 3,93	+ 5,29	13,04	27,90	14,86	- 0,10	14,48	18 . 22 . 27,44	+ 29,62	δ Ursæ Minoris.
			} 51,37					18 . 50 . 5,77		☉'s center.
			52,60	7,13	14,53			19 . 43 . 7,00	+ 0,31	α Aquilæ.
			21,42	35,81	14,39			19 . 47 . 35,82	+ 0,28	β Aquilæ.
			43,17	57,47	14,30		14,38	4 . 26 . 57,53	- 2,35	Aldebaran.
			12,91	27,88	14,97			6 . 22 . 27,26	+ 29,64	δ Ursæ Min. SP.
			6,88					7 . 16 . 21,23	- 2,68	Σ 1083. *sp.*
			30,55	44,84	14,29			7 . 35 . 44,90	- 2,83	Pollux.
			22,40					8 . 48 . 36,74		Ceres.
			47,81	1,97	14,16	- 0,12	14,20	5 . 7 . 1,98	- 2,25	Rigel.
			10,83	25,04	14,21			5 . 16 . 25,00	- 2,74	β Tauri.
			21,34					5 . 27 . 35,51	- 2,32	θ¹ Orionis.
			28,75	42,88	14,13			5 . 46 . 42,92	- 2,46	α Orionis.
			34,18					5 . 57 . 48,35	- 2,52	Σ 840. *np.*
			3,13					8 . 47 . 17,29		Ceres.
			3,44	17,51	14,07	- 0,9	14,15	21 . 23 . 17,51	- 0,06	β Aquarii.
			29,19	43,30	14,11			21 . 57 . 43,26	- 0,16	α Aquarii.
			21,87					22 . 38 . 35,93		☽ 1 L.
			48,03	57,05	14,02			22 . 56 . 57,09	- 0,36	α Pegasi.
			48,03					23 . 9 . 2,09	- 0,51	γ Piscium.
		+ 6,14	39,22			- 0,12	14,09	23 . 31 . 53,19	- 0,59	ι Piscium.
			1,92					23 . 51 . 15,89	- 0,70	ω Piscium.
			3,69	17,71	14,02		13,97	0 . 0 . 17,66	- 0,66	α Andromedæ.
			55,35					0 . 7 . 9,32		☽ 1 L.
			19,53					0 . 40 . 33,50	- 1,00	δ Piscium.
			47,10	2,92	15,82			1 . 3 . 1,06	- 2,63	Polaris M.
			7,80	21,76	13,96			1 . 58 . 21,76	- 1,54	α Arietis.
			52,62	6,53	13,91			2 . 54 . 6,58	- 1,78	α Ceti.
	- 3,08		15,60	29,28	13,68	- 0,11	13,80			α Herculis.
			25,04	38,81	13,77					α Ophiuchi.
			12,63	28,02	15,39			18 . 22 . 26,35	+ 29,50	δ Ursæ Minoris.
			} 35,89					19 . 20 . 49,60		☉'s center.
			12,85	28,05	15,20		13,69	6 . 22 . 26,51	+ 29,47	δ Ursæ Min. SP.
			12,54	28,05	15,51			6 . 22 . 26,20	+ 29,47	δ Urs. Min. SP. M.
			15,67	29,30	13,63	- 0,10	13,73	17 . 7 . 29,33	+ 0,15	α Herculis.
			} 57,32					19 . 25 . 10,97		☉'s center.
			53,51	7,17	13,66			19 . 43 . 7,16	+ 0,27	α Aquilæ.
			8,05	21,73	13,68		13,63	1 . 58 . 21,67	- 1,51	α Arietis.
			12,06					2 . 9 . 25,68	- 1,56	θ¹ Arietis.
			48,39	1,96	13,57			5 . 7 . 2,00	- 2,24	Rigel.
			11,44	25,05	13,61			5 . 16 . 25,05	- 2,75	β Tauri.
			31,16					8 . 42 . 44,75		Ceres.
			41,50				13,53	8 . 41 . 54,99		Ceres.
			58,65			- 0,13	13,31	3 . 38 . 11,94	- 2,16	η Tauri.
			14,36					3 . 55 . 27,65	- 2,22	A¹ Tauri.
			23,49					4 . 21 . 36,78		☽ 1 L.
			44,15	57,43	13,28			4 . 26 . 57,44	- 2,31	Aldebaran.
			32,24					4 . 53 . 45,52	- 2,50	ι Tauri.

The methods of obtaining the Collimation and Level Errors, and the calculations for finding the Meridian Error, are fully given in the Introduction.

The Error of Collimation was found by a Reversion of the Transit on Dec. 21, 1842.

Jan. 2. 3^h, the Transit was levelled.

Jan. 14. 1^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Jan. 12	(a) Rigel	7,5	21,2	34,6	48,5	2,1	15,7	5. 7.29,2		5. 6.48,40	G.
	η Tauri	56,8	11,2	25,6	40,3	54,7	9,2	5.10.23,8		5. 9.40,22	G.
	β Tauri	25,8	41,1	56,3	11,9	27,3	42,6	5.16.57,8		5.16.11,83	G.
	δ Ursæ Minoris SP.	10.46,4	14.34,0	18.19,4	22. 6,6	25.57,0	29.40,4	6.33.28,2		6.22. 7,43	G.
	Procyon	13,2	27,0	40,4	54,1	7,8	21,2	7.31.34,7		7.30.54,06	G.
Jan. 13	(b) α Herculis	......	......	2,1	16,3	30,1	44,0	17. 7.58,0	−13,89	17. 7.16,21	G.
	α Ophiuchi	44,1	58,1	11,8	25,8	39,6	53,2	17.28. 7,0		17.27.25,66	G.
Jan. 15	(c) δ Ursæ Minoris	......	......	......	......	26.12,4	29.57,0	18.33.45,4	−7.33,25	18.22.25,02	G.
Jan. 16	☉ 1 L.	59,8	14,1	28,4	43,3	57,9	12,1	19.50.26,7		19.49.43,18	G.
	☉ 2 L.	19,5	34,2	48,2	3,0	17,8	32,0	19.52.46,6		19.52. 3,04	G.
	γ^1 Eridani	49,9	3,7	17,2	31,3	45,3	59,1	3.51.13,1		3.50.31,37	G.
	β Tauri	26,4	41,9	57,0	12,7	28,0	43,1	5.16.58,5		5.16.12,51	G.
	α Leporis	55,1	9,4	23,6	37,7	52,0	6,0	5.26.20,1		5.25.37,70	G.
	α Orionis	49,5	3,0	16,3	30,2	43,9	57,5	5.47.11,0		5.46.30,20	G.
	δ Ursæ Minoris SP.	......	14.35,2	18.20,0	22. 7,0	25.56,8	29.40,4	6.33.28,0	−1.53,22	6.22. 8,01	G.
	Castor	37,1	53,2	9,0	25,0	40,9	56,9	7.25.12,9		7.24.25,00	G.
	Procyon	14,1	27,8	41,0	54,9	8,3	21,8	7.31.35,1		7.30.54,71	G.
	μ^1 Cancri	6,0	21,0	34,2	50,0	4,8	19,2	7.57.34,1		7.56.49,90	G.
	ζ Cancri. *np*	19,7	34,0	48,0	2,1	16,5	30,7	8. 3.44,5		8. 3. 2,21	G.
	(d) ☽ 2 L.	7,1	21,3	34,9	50,7	5,1	19,2	8.30.34,0		8.29.50,32	G.
	Ceres	31,0	46,6	1,9	17,7	33,2	......	8.37.....	+15,54	8.37.17,62	G.
	α^2 Cancri	2,1	16,0	29,8	43,7	57,6	11,0	8.50.25,0		8.49.43,60	G.
	κ Cancri	23,0	36,7	50,2	4,1	18,0	31,7	8.59.45,2		8.59. 4,13	G.
Jan. 17	Castor	37,3	53,5	9,1	25,2	41,3	57,0	7.25.13,0		7.24.25,20	G.
	Procyon	14,2	28,0	41,2	55,0	8,7	21,9	7.31.35,5		7.30.54,93	G.
	Pollux	46,8	2,1	17,2	32,8	48,1	3,1	7.36.18,6		7.35.32,67	G.
	Ceres	35,4	51,1	6,2	22,1	38,0	......	8.36.....	+15,56	8.36.22,12	G.
	α^2 Cancri	2,1	16,2	29,9	44,0	57,8	11,5	8.50.25,4		8.49.43,84	G.
	κ Cancri	......	36,9	50,6	4,3	18,1	31,9	8.59.45,6	−6,86	8.59. 4,37	G.
	(e) ☽ 2 L.	33,9	48,2	1,9	16,2	30,3	44,4	9.28.58,6		9.28.16,22	G.
	Regulus	8,8	22,7	36,2	50,2	4,1	17,9	10. 0.31,7		9.59.50,22	G.
Jan. 18	Sirius	21,4	35,6	49,2	3,9	17,9	31,8	6.38.45,8		6.38. 3,66	G.
	Procyon	14,2	28,0	41,2	55,0	8,3	21,9	7.31.35,4		7.30.54,86	G.
	Pollux	46,9	2,0	17,2	32,8	48,1	3,1	7.36.18,7		7.35.32,68	G.
	Ceres	39,1	54,9	10,2	26,1	41,8	......	8.35.....	+15,58	8.35.26,00	G.
Jan. 24	δ Geminorum	50,7	5,3	19,4	34,4	49,0	3,4	7.11.18,0		7.30.34,31	G.
	Procyon	13,8	27,2	40,7	54,2	8,0	21,4	7.31.34,9		7.30.54,31	G.
	Pollux	46,2	1,6	16,6	32,1	47,4	2,8	7.36.18,0		7.35.32,10	G.
	Ceres	49,3	5,2	20,7	36,5	52,3	......	8.29.....	+15,69	8.29.36,49	G.
	ϵ Hydræ	36,1	49,9	3,1	17,0	30,5	44,1	8.38.57,6		8.38.16,90	G.
Jan. 25	(f) ☉ 1 L.	6,0	20,4	34,7	49,0	3,4	17,5	20.28.....	+7,14	20.27.48,97	G.
	(f) ☉ 2 L.	24,1	......	52,5	7,1	21,1	35,4	20.30.....	+2,86	20.30. 6,90	G.
	(g) α Aquilæ	12,9	26,5	40,0	53,8	7,3	21,0	19.43.34,7		19.42.53,74	G.
Jan. 26	(h) ☉ 1 L.	16,1	......	......	......	13,5	27,4	20.32.....	−0,02	20.31.58,98	G.
	(h) ☉ 2 L.	33,8	48,3	2,2	16,8	31,0	45,1	20.34.59,7		20.34.16,70	G.
	α Orionis	48,3	2,1	15,5	29,0	42,9	56,4	5.47.10,0		5.46.29,18	G.
Jan. 28	α Andromedæ	17,1	32,4	47,3	3,1	18,3	33,6	0. 0.49,0		0. 0. 2,97	G.
	δ Geminorum	49,2	3,9	18,2	33,0	47,6	2,0	7.11.16,6		7.10.32,93	G.
	Ceres	50,8	6,7	22,1	38,2	54,0	......	8.25.....	+15,76	8.25.38,12	G.
Jan. 30	(i) ☉ 1 L.	47,6	1,7	15,7	30,2	44,2	58,4	20.49.12,7		20.48.30,07	G.
	(i) ☉ 2 L.	4,2	18,4	32,8	47,1	1,2	15,2	20.51.29,4		20.50.46,90	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA.*

(a) Badly defined. (b) Faint and unsteady.
(c) Last wire doubtful from faintness.
(d) Unsteady.
(e) Badly defined Limb.
(f) Extremely cloudy: some wires quite doubtful.
(g) Good.
(h) Very cloudy.
(i) Great motion, and no definition.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
−0,50	−3,08	+6,14	48,63	1,95	13,32	−0,13	13,31	5. 7. 1,91	−2,23	Rigel.
			40,22					5. 9.53,50	−2,58	*η* Tauri.
			11,77	25,05	13,28			5.16.25,05	−2,75	*β* Tauri.
			15,21	28,17	12,96			6.22.28,49	+29,35	δ Ursæ Min. SP.
			54,19	7,43	13,24			7.31. 7,46	−2,58	Procyon.
			16,27	29,39	13,12	−0,14	13,25			*α* Herculis.
			25,74	38,92	13,18					*α* Ophiuchi.
		+7,59	16,72	28,28	11,56	−0,17	12,78	18.22.29,37	+29,24	δ Ursæ Minoris.
			} 53,53					19.51. 6,17		☉'s center.
			31,73				12,61	3.50.44,31	−1,87	γ^1 Eridani.
			12,50	25,04	12,54			5.16.25,07	−2,74	*β* Tauri.
			38,09					5.25.50,66	−2,22	*α* Leporis.
			30,38	42,89	12,51			5.46.42,95	−2,47	*α* Orionis.
			16,86	28,31	11,45			6.22.29,42	+29,21	δ Ursæ Min. SP.
			24,93	37,58	12,65			7.24.37,49	−3,13	Castor.
			54,91	7,46	12,55			7.31. 7,47	−2,61	Procyon.
			49,94					7.57. 2,49	−2,89	μ^1 Cancri.
			2,29					8. 3.14,84	−2,79	ζ Cancri. *np.*
			50,43					8.30. 2,98		☽ 2 L.
			17,58					8.37.30,13		Ceres.
			43,74					8.49.56,29	−2,62	α^2 Cancri.
			4,28					8.59.16,83	−2,59	κ Cancri.
			25,13	37,58	12,45	−0,07	12,42	7.24.37,53	−3,13	Castor.
			55,13	7,47	12,34			7.31. 7,53	−2,62	Procyon.
			32,64	45,04	12,40			7.35.45,04	−3,03	Pollux.
			22,08					8.36.34,47		Ceres.
			43,98					8.49.56,37	−2,63	α^2 Cancri.
			4,52					8.59.16,91	−2,61	κ Cancri.
			16,37					9.28.28,76		☽ 2 L.
			50,36	2,78	12,42			10. 0. 2,75	−2,44	Regulus.
			4,04			0,01	12,41	6.38.16,45	−2,40	Sirius.
			55,06	7,48	12,42					Procyon.
			32,65	45,05	12,40					Pollux.
			25,96					8.35.38,37		Ceres.
	−3,54		34,33			0,23	12,97	7.10.47,37	−2,92	δ Geminorum.
			54,49	7,51	13,02					Procyon.
			32,04	45,10	13,06					Pollux.
			36,41					8.29.49,46		Ceres.
			17,06					8.38.30,11	−2,68	ε Hydræ.
			} 58,32					20.29.11,49		☉'s center.
			53,90	7,36	13,46	0,44	13,04			*α* Aquilæ.
			} 8,23					20.33.21,65		☉'s center.
			29,34	42,86	13,52		13,48			*α* Orionis.
			2,92	17,46	14,54	0,52	14,54			*α* Andromedæ.
			32,95					7.10.47,65	−2,92	δ Geminorum.
			38,04					8.25.52,76		Ceres.
			} 38,87			0,34	15,25	20.49.54,42		☉'s center.

Jan. 28. 2^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Jan. 30	φ Piscium........	15,4	30,1	44,7	59,5	14,3	29,0	1. 5.43,8		1. 4.59,55	G.
	(a) Σ 162.............	19,1	39,0	58,7	18,7	......	58,1	1.40.18,1	+3,31	1.39.18,59	G.
	α Arietis.........	22,1	36,9	51,1	6,1	20,7	35,0	1.58.50,0		1.58. 5,99	G.
	γ Ceti............	15,6	29,1	42,3	56,1	9,3	23,0	2.35.36,5		2.34.55,99	G.
	α Ceti............	10,0	23,4	37,0	50,7	4,1	17,3	2.54.31,2		2.53.50,53	G.
	Σ 401. *f*..........	54,0	9,0	24,1	39,3	54,5	9,6	3.22.24,7		3.21.39,32	G.
	e Pleiadum.......	54,6	9,2	23,9	38,9	53,7	8,1	3.36.23,1		3.35.38,79	G.
	η Tauri...........	12,0	26,8	41,2	56,2	11,0	25,6	3.38.40,2		3.37.56,15	G.
	(b) Aldebaran........	......	13,5	27,2	41,7	55,6	9,8	4.27.23,7	−7,01	4.26.41,57	G.
	Ceres............	52,0	7,8	23,3	39,4	55,1	......	8.23.....	+15,79	8.23.39,31	G.
	α Hydræ.........	58,1	11,8	25,1	39,1	52,7	5,1	9.20.18,2		9.19.38,59	G.
	Vesta............	4,0	18,5	32,6	47,1	1,6	......	9.52.....	+14,33	9.51.47,09	G.
Jan. 31	γ Ceti............	15,0	28,8	42,0	55,8	9,1	22,6	2.35.36,1		2.34.55,63	G.
	α Ceti............	9,8	23,1	36,5	50,1	3,8	17,2	2.54.30,7		2.53.50,17	G.
	ι Persei...........	30,8	51,5	11,9	32,9	53,2	13,7	2.58.34,1		2.57.32,59	G.
	Σ 401. *f*..........	53,5	8,9	23,7	39,0	54,1	9,1	3.22.24,3		3.21.38,95	G.
	(c) Aldebaran........	59,1	13,3	27,2	41,3	55,4	9,4	4.27.23,2		4.26.41,27	G.
Feb. 1	☉ 1 L............	58,2	12,4	26,4	40,9	55,0	9,0	20.57.23,1		20.56.40,71	G.
	☉ 2 L............	14,8	28,9	43,0	57,1	11,3	25,2	20.59.39,4		20.58.57,10	G.
	(b) Σ 520...........	56,0	10,8	24,9	39,8	54,3	9,0	4. 9.23,4		4. 8.39,75	G.
	Aldebaran........	58,7	13,0	26,7	40,9	55,0	9,0	4.27.23,0		4.26.40,90	G.
Feb. 2	Castor............	......	49,0	4,7	21,0	36,7	52,6	7.25. 8,7	−7,96	7.24.20,82	G.
	(d) Procyon.........	9,8	23,4	36,8	50,3	4,1	17,6	7.31.31,0		7.30.50,42	G.
	Pollux............	42,5	57,9	12,8	28,2	43,8	58,9	7.36.14,2		7.35.28,33	G.
	(e) Ceres............	56,9	12,8	28,6	44,6	0,2	......	8.21.....	+15,83	8.20.44,45	G.
	Vesta............	20,0	34,2	48,6	3,2	17,6	......	9.49.....	+14,37	9.49. 3,09	G.
	Regulus..........	4,7	18,5	32,1	46,2	0,0	13,7	10. 0.27,6		9.59.46,12	G.
Feb. 3	Ceres............	0,1	15,9	31,7	47,7	3,6	......	8.20.....	+15,85	8.19.47,65	G.
	Vesta............	23,7	38,2	52,3	7,0	21,2	......	9.48.....	+14,38	9.48. 6,86	G.
	Regulus..........	4,8	18,4	32,1	46,0	59,9	13,7	10. 0.27,2		9.59.46,01	G.
Feb. 9	α Aquilæ.........	10,2	23,9	37,3	51,1	4,8	18,5	19.43.32,0		19.42.51,11	G.
Feb. 10	☉ 1 L............	9,4	23,5	37,2	51,6	5,6	19,3	21.33.33,4		21.32.51,42	G.
	☉ 2 L............	23,8	38,0	51,7	5,9	19,9	33,7	21.35.47,6		21.35. 5,80	G.
	(e) Rigel............	4,2	18,0	31,1	45,3	58,9	12,6	5. 7.26,0		5. 6.45,16	G.
	(e) α Orionis.........	45,5	......	......	26,2	40,1	53,4	5.47. 7,0	−8,16	5.46.26,28	G.
	☽ 1 L............	8,4	23,8	38,8	54,1	9,3	24,3	5.53.39,9		5.52.54,08	G.
	μ Geminorum....	30,2	45,1	59,4	14,1	28,7	43,2	6.13.57,9		6.13.14,08	G.
	δ Ursæ Minoris SP.	......	......	18.20,8	22. 7,2	25.57,0	29.40,0	6.......	−1.53,08	6.22. 8,17	G.
	ε Geminorum.....	18,0	32,9	47,8	2,9	17,8	32,7	6.34.47,4		6.34. 2,78	G.
	(*f*) Sirius............	17,1	31,3	45,4	59,8	13,8	27,8	6.38.41,7		6.37.59,56	G.
	(*g*) Procyon.........	10,6	24,1	37,3	51,1	4,6	18,1	7.31.31,8		7.30.51,08	G.
	(*h*) Pollux............	43,0	58,2	13,5	29,0	44,1	59,5	7.36.14,8		7.35.28,87	G.
Feb. 12	(e) α Hydræ.........	57,7	11,1	24,6	38,6	51,9	......	9.19.....	+13,58	9.19.38,36	G.
	α Aquilæ.........	10,2	24,0	37,2	51,1	4,8	18,4	19.43.31,4		19.42.51,01	G.
Feb. 13	(i) ☉ 1 L............	58,6	12,8	26,2	40,2	54,3	8,1	21.45.22,2		21.44.40,34	G.
	☉ 2 L............	12,2	26,1	40,1	54,1	8,1	21,9	21.47.36,0		21.46.54,07	G.
	α Andromedæ....	15,2	30,7	45,7	1,1	16,4	31,6	0. 0.46,8		0. 0. 1,07	G.
	α Arietis.........	21,0	35,9	50,1	5,0	19,5	34,0	1.58.48,8		1.58. 4,90	G.
	γ Ceti............	14,5	28,0	41,4	55,1	8,5	22,0	2.35.35,5		2.34.55,00	G.
	α Ceti............	9,1	22,8	36,0	49,5	3,1	16,6	2.54.30,0		2.53.49,59	G.
	ι Persei...........	30,1	50,9	11,0	32,0	52,5	12,9	2.58.33,3		2.57.31,81	G.
	Σ 401. *f*..........	53,0	8,1	23,1	38,3	53,3	8,6	3.22.23,8		3.21.38,32	G.
	Σ 559. *np*.........	31,1	45,3	59,2	13,8	27,8	41,9	4.24.56,0		4.24.13,58	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) The close double observed as single: the third star was not seen. (*b*) Cloudy.
(*c*) Boisterous wind: clock scarcely heard.
(*d*) Flaring. (*e*) Very cloudy.
(*f*) Blazing.
(*g*) Often invisible from clouds.
(*h*) Snow falling.
(*i*) Great waving.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	"	"	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,50	− 3,54	+ 7,59	59,55			0,34	15,59	1 . 5 . 15,16	− 0,84	φ Piscium.
			18,26					1 . 39 . 33,87	− 1,17	Σ 162.
			6,00	21,45	15,45			1 . 58 . 21,62	− 1,23	α Arietis.
			56,19					2 . 35 . 11,82	− 1,38	γ Ceti.
			50,72	6,25	15,53			2 . 54 . 6,35	− 1,50	α Ceti.
			39,28					3 . 21 . 54,92	− 1,87	Σ 401. *f.*
			38,79					3 . 35 . 54,43	− 1,93	*e* Pleiadum.
			56,15					3 . 38 . 11,79	− 1,94	η Tauri.
			41,65	57,28	15,63			4 . 26 . 57,30	− 2,16	Aldebaran.
			39,21					8 . 23 . 54,92		Ceres.
			38,89	54,93	16,04			9 . 19 . 54,61	− 2,59	α Hydræ.
			47,13					9 . 52 . 2,86		Vesta.
			55,83			0,32	15,85	2 . 35 . 11,71	− 1,37	γ Ceti
			50,36	6,24	15,88					α Ceti.
			32,23					2 . 57 . 48,12	− 1,93	ι Persei.
			38,91					3 . 21 . 54,80	− 1,85	Σ 401. *f.*
			41,35	57,27	15,92					Aldebaran.
		+ 6,43	49,21			0,47	15,77	20 . 58 . 5,39		☉'s center.
			39,73				16,24	4 . 8 . 56,05	− 2,11	Σ 520.
			40,93	57,26	16,33					Aldebaran.
			20,69	37,66	16,97	0,30	16,84	7 . 24 . 37,62	− 3,21	Castor.
			50,55	7,54	16,99			7 . 31 . 7,48	− 2,69	Procyon.
			28,23	45,13	16,90			7 . 35 . 45,16	− 3,12	Pollux.
			44,32					8 . 21 . 1,26		Ceres.
			3,07					9 . 49 . 20,03		Vesta.
			46,18	3,08	16,90			10 . 0 . 3,14	− 2,74	Regulus.
			47,52			0,07	16,99	8 . 20 . 4,53		Ceres.
			6,84					9 . 48 . 23,86		Vesta.
			46,07	3,09	17,02					Regulus.
	− 3,80		51,19	7,60	16,41	0,01	16,34	19 . 43 . 7,54	− 0,16	α Aquilæ.
			58,88					21 . 34 . 15,23		☉'s center.
			45,38	1,69	16,31		16,35	5 . 7 . 1,73	− 1,97	Rigel.
			26,38	42,74	16,36			5 . 46 . 42,73	− 2,32	α Orionis.
			54,02					5 . 53 . 10,37		☽ 1 L.
			14,03					6 . 13 . 30,38	− 2,69	μ Geminorum.
			16,77	32,45	15,68			6 . 22 . 33,12	+ 25,07	δ Ursæ Min. SP.
			2,71					6 . 34 . 19,06	− 2,84	ε Geminorum.
			59,85					6 . 38 . 16,20	− 2,29	Sirius.
			51,20	7,52	16,32			7 . 31 . 7,55	− 2,67	Procyon.
			28,75	45,12	16,37			7 . 35 . 45,10	− 3,11	Pollux.
			38,58	55,03	16,45	− 0,04	16,47			α Hydræ.
			51,09	7,66	16,57	− 0,15	16,57	19 . 43 . 7,54	− 0,22	α Aquilæ.
			47,47					21 . 46 . 3,90		☉'s center.
			0,97	17,32	16,35		16,42	0 . 0 . 17,39	− 0,27	α Andromedæ.
			4,85	21,25	16,40			1 . 58 . 21,26	− 1,03	α Arietis.
			55,13					2 . 35 . 11,53	− 1,18	γ Ceti.
			49,71	6,05	16,34			2 . 54 . 6,11	− 1,30	α Ceti.
			31,41					2 . 57 . 47,81	− 1,61	ι Persei.
			38,23					3 . 21 . 54,63	− 1,64	Σ 401. *f.*
			13,58					4 . 24 . 29,97	− 1,97	Σ 559. *np.*

Feb. 13. 2^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Feb. 13	2 Camelopardali . .	12,1	34,8	57,0	19,8	42,2	4,7	4 . 28 . 27,0		4 . 27 . 19,66	G.
	β Aurigæ........	50,7	10,0	28,9	48,1	6,9	26,0	5 . 48 . 45,1		5 . 47 . 47,96	G.
	δ Ursæ Minoris SP.	10.49,4	14.37,0	18.22,8	22. 7,4	25.58,8	29.41,0	6 . 33 . 28,8		6 . 22 . 9,31	G.
	Procyon..........	10,3	24,1	37,4	51,0	4,5	18,0	7 . 31 . 31,5		7 . 30 . 50,97	G.
	Pollux..........	43,0	58,3	13,3	29,0	44,3	59,6	7 . 36 . 14,8		7 . 35 . 28,90	G.
	Σ 1177. *s*........	0,2	15,7	30,7	46,1	1,4	16,4	7 . 56 . 31,8		7 . 55 . 46,05	G.
	Ceres............	22,9	38,9	54,7	10,8	26,6	......	8 . 11	+ 15,95	8 . 11 . 10,73	G.
	θ Cancri.........	42,1	56,2	10,4	25,0	39,4	53,2	8 . 23 . 7,5		8 . 22 . 24,83	G.
	δ Cancri..........	49,2	3,4	17,4	32,1	46,1	0,4	8 . 36 . 14,7		8 . 35 . 31,90	G.
	☽ 1 L.	15,0	29,2	43,4	57,9	12,0	26,2	8 . 56 . 40,8		8 . 55 . 57,79	G.
Feb. 14	(*a*) Σ 1177. *s*........	0,3	15,7	30,9	46,2	1,5	16,8	7 . 56 . 32,1		7 . 55 . 46,22	G.
	(*b*) Ceres............	37,8	53,8	9,5	25,8	41,8	......	8 . 10	+ 15,96	8 . 10 . 25,70	G.
	(*c*) ε Hydræ.........	33,2	46,9	0,0	14,0	27,3	41,1	8 . 38 . 54,4		8 . 38 . 13,84	G.
	(*d*) α Hydræ.........	57,7	11,6	24,9	38,6	52,2	6,0	9 . 20 . 19,4		9 . 19 . 38,63	G.
	ξ Leonis.........	34,0	48,0	1,8	15,6	29,4	43,1	9 . 23 . 56,6		9 . 23 . 15,50	G.
	14 Leonis.........	51,3	5,1	18,8	32,7	46,4	0,0	9 . 33 . 13,4		9 . 32 . 32,53	G.
	(*e*) Vesta............	32,8	47,3	1,8	16,4	31,0	......	9 . 37	+ 14,52	9 . 37 . 16,38	G.
	(*f*) ☽ 2 L............	7,1	21,3	35,4	49,8	3,7	17,4	9 . 57 . 31,8		9 . 56 . 49,50	G.
	(*e*) Regulus..........	5,7	19,3	33,1	47,1	1,1	14,8	10 . 0 . 28,2		9 . 59 . 47,04	G.
	ρ Leonis.........	37,9	51,5	5,1	19,1	32,5	46,4	10 . 25 . 0,0		10 . 24 . 18,93	G.
	(*g*) 34 Sextantis......	37,0	50,2	3,8	17,3	30,9	44,1	10 . 34 . 57,7		10 . 34 . 17,29	G.
Feb. 15	(*h*) Procyon.........	10,9	24,2	37,9	51,6	5,1	18,5	7 . 31 . 32,1		7 . 30 . 51,47	G.
	Pollux............	43,3	58,8	13,9	29,4	44,7	0,1	7 . 36 . 15,2		7 . 35 . 29,35	G.
	α Hydræ.........	58,1	11,8	25,0	39,0	52,3	6,0	9 . 20 . 19,6		9 . 19 . 38,83	G.
	(*i*) ☽ 2 L............	22,7	36,8	50,2	4,4	18,2	31,8	10 . 54 . 45,9		10 . 54 . 4,29	G.
	τ Leonis.........	......	......	24,7	38,2	52,0	5,3	11 . 20 . 18,8	− 13,48	11 . 19 . 38,32	G.
	υ Leonis.........	0,8	14,2	27,6	41,1	54,8	8,0	11 . 29 . 21,6		11 . 28 . 41,15	G.
Feb. 16	δ Ursæ Minoris...	11. 8,4	14.55,4	18.40,2	22.29,6	26.14,4	30. 1,8	18 . 33 . 47,0		18 . 22 . 28,11	G.
	α Aquilæ.........	11,5	25,1	38,5	52,3	6,0	19,4	19 . 43 . 33,1		19 . 42 . 52,27	G.
Feb. 17	(*c*) ⊙ 1 L...........	34,5	48,4	2,1	16,1	29,8	43,5	22 . 0 . 57,4		22 . 0 . 15,97	G.
	(*c*) ⊙ 2 L...........	47,4	1,2	15,0	28,9	42,8	56,6	22 . 3 . 10,6		22 . 2 . 28,93	G.
	Rigel............	5,2	18,9	32,4	46,1	59,9	13,2	5 . 7 . 27,0		5 . 6 . 46,10	G.
	β Tauri..........	23,8	39,0	54,1	9,8	25,0	40,2	5 . 16 . 55,7		5 . 16 . 9,66	G.
Feb. 21	Aldebaran........	1,0	15,2	29,0	43,2	57,2	11,3	4 . 27 . 25,4		4 . 26 . 43,18	G.
	(*k*) ρ Orionis.........	12,7	26,2	39,5	53,2	6,7	20,0	5 . 5 . 33,8		5 . 4 . 53,16	G.
	Rigel............	6,5	20,2	33,8	47,7	1,1	14,7	5 . 7 . 28,3		5 . 6 . 47,47	G.
	γ Orionis.........	50,4	4,0	17,2	31,0	44,4	58,1	5 . 17 . 11,5		5 . 16 . 30,94	G.
	(*k*) 33 Orionis......	8,2	21,6	34,8	48,6	2,1	15,6	5 . 23 . 29,2		5 . 22 . 48,59	G.
	(*k*) Σ 734............	......	......	45,9	59,6	12,9	26,3	5 . 25 . 39,8	− 13,52	5 . 24 . 59,38	G.
	(*k*) 125 Tauri.........	4,3	19,3	34,1	49,3	4,1	19,1	5 . 30 . 34,1		5 . 29 . 49,19	G.
	(*k*) δ Ursæ Minoris SP.	10.54,4	14.41,0	18.27,2	22.12,8	......	......	6.........	+ 5 . 39,83	6 . 22 . 13,68	G.
Feb. 22	α Orionis........	48,0	1,6	15,2	28,8	42,3	56,0	5 . 47 . 9,6		5 . 46 . 28,79	G.
	(*l*) δ Ursæ Minoris SP.	10.55,2	14.41,8	18.27,8	22.13,4	26. 5,0	29.47,6	6 . 33 . 36,0		6 . 22 . 15,26	G.
	α Hydræ.........	0,1	13,8	27,3	41,1	54,8	8,2	9 . 20 . 21,9		9 . 19 . 41,03	G.
	Vesta............	42,3	57,0	11,3	26,1	40,9	......	9 . 29	+ 14,61	9 . 29 . 26,13	G.
	Regulus..........	7,9	22,1	35,7	49,7	3,2	17,1	10 . 0 . 31,0		9 . 59 . 49,53	G.
Feb. 23	ρ Orionis.........	12,7	26,1	39,5	53,0	6,3	20,0	5 . 5 . 33,7		5 . 4 . 53,04	G.
	Rigel............	6,6	20,1	33,8	47,6	1,1	14,7	5 . 7 . 28,2		5 . 6 . 47,45	G.
	γ Orionis.........	50,0	3,8	17,1	30,8	44,3	57,9	5 . 17 . 11,5		5 . 16 . 30,77	G.
	(*m*) Σ 734. *nf*.........	18,8	32,2	45,5	59,2	12,8	26,4	5 . 25 . 39,7		5 . 24 . 59,23	G.
	(*n*) Σ 758. *np*........	15,2	28,6	42,0	55,7	9,1	22,3	5 . 30 . 36,0		5 . 29 . 55,56	G.
	α Orionis.........	47,9	1,4	14,7	28,7	42,2	55,8	5 . 47 . 9,3		5 . 46 . 28,57	G.
	(*o*) δ Ursæ Minoris SP.	10.56,0	14.42,8	18.27,4	22.12,8	26. 5,6	29.48,0	6 . 33 . 34,0		6 . 22 . 15,26	G.
	Sirius............	19,7	33,9	47,8	2,0	16,0	29,9	6 . 38 . 44,1		6 . 38 . 1,91	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Unsteady and ill-defined. (*b*) Indistinct. (*c*) Very unsteady. (*d*) Large, unsteady disk. (*e*) Unsatisfactory. (*f*) Bad definition. (*g*) Faint and indefinite. The state of the atmosphere this night was singularly unfavorable for observing. (*h*) Flaring. (*i*) Misty. (*k*) Cloudy. (*l*) Clouded at the last two wires. (*m*) This is a close double star, observed as single: the south following is a fainter star. (*n*) Excessively faint: the tenths of a second are all doubtful. (*o*) Good.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,50	− 3,80	+ 6,43	19,17			− 0,15	16,42	4 . 27 . 35,56	− 2,74	2 Camelopardali.
			47,63					5 . 48 . 4,01	− 3,13	β Aurigæ.
			17,91	33,11	15,20			6 . 22 . 34,29	+ 24,41	δ Ursæ Min. SP.
			51,09	7,50	16,41			7 . 31 . 7,46	− 2,65	Procyon.
			28,78	45,10	16,32			7 . 35 . 45,15	− 3,09	Pollux.
			45,95					7 . 56 . 2,32	− 3,14	Σ 1177. *s.*
			10,58					8 . 11 . 26,95		Ceres.
			24,82					8 . 22 . 41,19	− 2,96	θ Cancri.
			31,89					8 . 35 . 48,26	− 2,98	δ Cancri.
			57,83					8 . 56 . 14,19		☽ 1 L.
			46,12			− 0,23	16,25	7 . 56 . 2,29	− 3,13	Σ 1177. *s.*
			25,55					8 . 10 . 41,72		Ceres.
			13,94					8 . 38 . 30,11	− 2,80	ε Hydræ.
			38,85	55,04	16,19					α Hydræ.
			15,55					9 . 23 . 31,71	− 2,90	ξ Leonis.
			32,60					9 . 32 . 48,76	− 2,89	14 Leonis.
			16,34					9 . 37 . 32,50		Vesta.
			49,59					9 . 57 . 5,74		☽ 2 L.
			47,09	3,22	16,13					Regulus.
			19,01					10 . 24 . 35,16	− 2,82	ρ Leonis.
			17,41					10 . 34 . 33,56	− 2,75	34 Sextantis.
			51,59	7,49	15,90	− 0,30	16,02	7 . 31 . 7,52	− 2,64	Procyon.
			29,23	45,09	15,86			7 . 35 . 45,15	− 3,08	Pollux.
			39,05	55,04	15,99			9 . 19 . 54,95	− 2,70	α Hydræ.
			4,43					10 . 54 . 20,31		☽ 2 L.
			38,44					11 . 19 . 54,32	− 2,67	τ Leonis.
			41,30					11 . 28 . 57,18	− 2,62	υ Leonis.
			19,88	34,10	14,22	− 0,38	15,67	18 . 22 . 35,26	+ 23,42	δ Ursæ Minoris.
			52,35	7,74	15,39			19 . 43 . 7,71	− 0,30	α Aquilæ.
			} 22,71					22 . 1 . 38,03		☉'s center.
			46,32	1,58	15,26		15,29	5 . 7 . 1,53	− 1,86	Rigel.
			9,56	24,70	15,14			5 . 16 . 24,77	− 2,40	β Tauri.
	− 3,58	+ 4,64	43,14	56,96	13,82	− 0,04	13,88			Aldebaran.
			53,21					5 . 5 . 7,08	− 1,89	ρ Orionis.
			47,59	1,51	13,92					Rigel.
			30,96					5 . 16 . 44,83	− 2,00	γ Orionis.
			48,64					5 . 23 . 2,51	− 2,00	33 Orionis.
			59,47					5 . 25 . 13,34	− 1,96	Σ 734.
			49,06					5 . 30 . 2,93	− 2,36	125 Tauri.
			20,77	35,44	14,67			6 . 22 . 34,64	+ 22,08	δ Ursæ Min. SP.
			28,81	42,58	13,77	0,05	13,80	5 . 46 . 42,62	− 2,16	α Orionis.
			22,35	35,70	13,35			6 . 22 . 36,16	+ 21,82	δ Ursæ Min. SP.
			41,15	55,06	13,91			9 . 19 . 54,97	− 2,72	α Hydræ.
			26,03					9 . 29 . 39,85		Vesta.
			49,51	3,28	13,77			10 . 0 . 3,33	− 2,94	Regulus.
			53,09			0,14	13,91	5 . 5 . 7,03	− 1,87	ρ Orionis.
			47,57	1,48	13,91					Rigel.
			30,79					5 . 16 . 44,73	− 1,97	γ Orionis.
			59,32					5 . 25 . 13,26	− 1,93	Σ 734. *nf.*
			55,63					5 . 30 . 9,57	− 1,97	Σ 758. *np.*
			28,59	42,56	13,97					α Orionis.
			22,35	35,97	13,62			6 . 22 . 36,30	+ 21,55	δ Ursæ Min. SP.
			2,09					6 . 38 . 16,04	− 2,12	Sirius.

Feb. 22. 2^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Mar. 1	ω^1 Geminorum....	54,9	9,9	24,6	39,5	54,1	9,0	6 . 53 . 23,8		6 . 52 . 39,40	G.
	Procyon	12,7	26,2	39,5	53,2	6,8	20,4	7 . 31 . 33,9		7 . 30 . 53,24	G.
	Pollux...........	45,0	0,6	15,8	31,0	46,5	1,9	7 . 36 . 17,0		7 . 35 . 31,11	G.
	α Hydræ.........	0,0	13,8	27,0	41,0	54,3	8,0	9 . 20 . 21,7		9 . 19 . 40,83	G.
	Vesta............	26,1	41,0	55,4	10,5	25,2	......	9 . 23	+ 14,68	9 . 23 . 10,32	G.
	Regulus	8,0	21,8	35,3	49,3	3,1	17,0	10 . 0 . 30,7		9 . 59 . 49,32	G.
	(*a*) β Aquilæ........	42,0	55,6	9,0	22,7	36,1	49,7	19 . 48 . 3,2		19 . 47 . 22,61	G.
Mar. 2	Procyon..........	12,5	26,2	39,7	53,3	7,0	20,1	7 . 31 . 33,9		7 . 30 . 53,24	G.
	Pollux...........	45,2	0,6	15,7	31,2	46,5	1,6	7 . 36 . 17,0		7 . 35 . 31,11	G.
	Σ 1177. *s*.........	2,7	17,9	33,0	48,2	3,6	18,8	7 . 56 . 34,0		7 . 55 . 48,32	G.
	11 Cancri........	16,1	31,6	46,5	2,0	17,1	32,6	7 . 59 . 47,8		7 . 59 . 1,95	G.
	α Hydræ.........	0,1	13,7	27,0	41,0	54,3	8,0	9 . 20 . 21,5		9 . 19 . 40,80	G.
	Vesta............	37,1	51,7	6,3	21,0	36,0	......	9 . 22	+ 14,69	9 . 22 . 21,11	G.
	(*a*) Regulus	7,9	......	35,2	49,3	3,1	17,0	10 . 0 . 30,7	− 4,60	9 . 59 . 49,27	G.
Mar. 3	Aldebaran	0,8	14,8	28,5	42,6	56,9	10,9	4 . 27 . 25,0		4 . 26 . 42,78	G.
	Rigel............	6,2	19,9	33,3	47,1	0,9	14,2	5 . 7 . 28,0		5 . 6 . 47,09	G.
	(*b*) Σ 758. *np*.........	14,9	28,3	41,8	55,4	8,7	......	5 . 30	+ 13,46	5 . 29 . 55,28	G.
	(*c*) δ Ursæ Minoris SP.	10.56,0	14.42,0	18.25,8	......	......	......	6 . 33 . 35,6	+ 2 . 49,92	6 . 22 . 14,77	G.
	(*c*) 51 (Hev.) Cephei .	......	15.58,6	......	......	30. 6,4	34.47,0	6 . 39 . 29,6	− 4 . 42,76	6 . 25 . 22,64	G.
	Procyon..........	12,6	26,1	39,4	53,2	6,8	20,2	7 . 31 . 33,8		7 . 30 . 53,16	G.
	Pollux...........	45,0	0,3	15,6	31,1	46,2	1,6	7 . 36 . 17,0		7 . 35 . 30,97	G.
	α Hydræ.........	......	13,7	27,0	40,9	54,5	8,0	9 . 20	0,00	9 . 19 . 40,82	G.
	Vesta............	49,1	4,0	18,4	33,2	48,0	......	9 . 21	+ 14,70	9 . 21 . 33,24	G.
Mar. 4	(*b*) Σ 559. *p*..........	33,0	47,2	1,4	15,6	29,6	43,9	4 . 24 . 58,0		4 . 24 . 15,53	G.
	Aldebaran........	0,6	14,7	28,6	42,9	56,9	10,9	4 . 27 . 24,8		4 . 26 . 42,77	G.
	Rigel............	6,1	19,9	33,3	47,0	0,7	14,1	5 . 7 . 28,0		5 . 6 . 47,02	G.
	Σ 758. *np*.........	14,8	28,4	41,8	55,3	8,8	22,2	5 . 30	+ 6,73	5 . 29 . 55,28	G.
	β Aurigæ.........	52,8	12,1	30,6	49,9	9,0	28,1	5 . 48 . 47,0		5 . 47 . 49,93	G.
	δ Ursæ Minoris SP.	10.56,6	14.43,0	18.29,2	22.15,0	26. 6,0	......	6 . 33 . 36,2	+ 1 . 15,28	6 . 22 . 16,28	G.
	(*d*) 51 (Hev.) Cephei .	11.17,0	15.55,8	20.36,0	25.22,4	30. 5,0	34.46,2	6 . 39 . 28,6		6 . 25 . 21,57	G.
	Castor...........	35,6	51,7	7,3	23,7	39,4	55,1	7 . 25 . 11,2		7 . 24 . 23,43	G.
	Procyon	12,7	26,1	39,4	53,0	6,8	20,1	7 . 31 . 33,7		7 . 30 . 53,11	G.
	Pollux	45,0	0,5	15,7	31,0	46,3	1,7	7 . 36 . 16,9		7 . 35 . 31,01	G.
	Vesta............	2,6	17,5	31,8	46,9	1,7	......	9 . 21	+ 14,71	9 . 20 . 46,81	G.
Mar. 6	(*b*) α Pegasi..........	0,8	15,0	28,5	42,7	56,5	10,4	22 . 57 . 24,3		22 . 56 . 42,60	G.
Mar. 7	(*e*) ⊙ 1 L.	37,7	51,5	4,8	18,6	32,1	45,7	23 . 8 . 59,3		23 . 8 . 18,53	G.
	(*e*) ⊙ 2 L.	47,7	1,3	14,9	28,4	42,1	55,7	23 . 11 . 9,2		23 . 10 . 28,47	G.
	α Andromedæ. ...	......	32,4	47,4	3,1	18,2	33,6	0 . 0 . 49,0	− 7,63	0 . 0 . 2,99	G.
	α Arietis	22,9	37,6	52,0	6,9	21,2	35,8	1 . 58 . 50,5		1 . 58 . 6,70	G.
	α Ceti...........	10,9	24,3	37,6	51,4	5,0	18,3	2 . 54 . 31,9		2 . 53 . 51,34	G.
	☽ 1 L............	51,9	6,8	21,6	36,8	51,7	6,7	3 . 34 . 21,6		3 . 33 . 36,73	G.
	δ Ursæ Minoris SP.	10.58,4	14.45,6	18.30,4	22.17,0	26. 6,2	29.50,0	6 . 33 . 36,6		6 . 22 . 17,74	G.
	51 (Hev.) Cephei .	......	15.55,8	20.32,2	25.20,2	......	34.44,6	6 . 39 . 25,0	− 1 . 52,57	6 . 25 . 18,99	G.
	Pollux............	44,5	0,0	15,3	30,9	46,1	1,2	7 . 36 . 16,5		7 . 35 . 30,64	G.
	Vesta............	51,8	6,5	21,1	36,1	50,8	......	9 . 18	+ 14,73	9 . 18 . 35,99	G.
Mar. 8	Aldebaran	0,1	14,2	28,1	42,2	56,5	10,4	4 . 27 . 24,5		4 . 26 . 42,28	G.
	☽ 1 L............	9,2	24,6	39,7	55,0	10,0	25,1	4 . 29 . 40,2		4 . 28 . 54,83	G.
	ι Tauri	47,0	1,6	15,9	30,4	45,0	59,4	4 . 54 . 14,0		4 . 53 . 30,47	G.
	Rigel............	5,2	19,5	33,0	46,8	0,3	14,0	5 . 7 . 27,6		5 . 6 . 46,63	G.
	(*f*) *n* Tauri..........	55,0	9,3	23,9	38,6	53,0	7,6	5 . 10 . 22,0		5 . 9 . 38,49	G.
	β Tauri..........	24,0	39,5	54,6	10,1	25,6	40,9	5 . 16 . 56,1		5 . 16 . 10,11	G.
	β Aurigæ.........	52,4	11,5	30,1	49,5	8,6	27,7	5 . 48 . 46,3		5 . 47 . 49,45	G.
	δ Ursæ Minoris SP.	10.57,6	14.46,6	18.30,0	22.16,4	26. 4,4	29.48,0	6 . 33 . 36,2		6 . 22 . 17,03	G.
	51 (Hev.) Cephei .	......	15.56,0	20.34,8	25.20,8	......	34.44,8	6 . 39 . 27,0	− 1 . 52,57	6 . 25 . 20,11	G.
	Procyon..........	12,1	25,7	39,2	53,0	6,2	20,0	7 . 31 . 33,3		7 . 30 . 52,78	G.
	Pollux	44,6	0,1	15,1	30,7	46,0	1,1	7 . 36 . 16,6		7 . 35 . 30,60	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Clouds passing.
(*b*) Faint.
(*c*) Interrupted by clouds.
(*d*) Hurried at first wire.
(*e*) Great motion, and frequently clouded.
(*f*) Scarcely day-light enough for seeing the wires.

Error of Collima-tion.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock ap-parently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
– 0,50	– 4,23	+ 6,27	39,31			0,01	14,01	6 . 52 . 53,32	– 2,67	ω^1 Geminorum.
			53,33	7,37	14,04			7 . 31 . 7,34	– 2,52	Procyon.
			30,96	44,97	14,01			7 . 35 . 44,97	– 2,96	Pollux.
			41,03	55,05	14,02			9 . 19 . 55,04	– 2,71	α Hydræ.
			10,23					9 . 23 . 24,24		Vesta.
			49,35	3,30	13,95			10 . 0 . 3,36	– 2,96	Regulus.
			22,68	36,69	14,01	0,03	13,98	19 . 47 . 36,68	– 0,60	β Aquilæ.
			53,33	7,36	14,03		14,01	7 . 31 . 7,35	– 2,51	Procyon.
			30,96	44,96	14,00			7 . 35 . 44,98	– 2,95	Pollux.
			48,18					7 . 56 . 2,20	– 3,02	Σ 1177. *s.*
			1,81					7 . 59 . 15,83	– 3,02	11 Cancri.
			41,00	55,05	14,05			9 . 19 . 55,02	– 2,71	α Hydræ.
			21,02					9 . 22 . 35,04		Vesta.
			49,30	3,30	14,00			10 . 0 . 3,32	– 2,96	Regulus.
			42,77	56,79	14,02	0,04	14,05	4 . 26 . 56,83	– 1,67	Aldebaran.
			47,29	1,34	14,05			5 . 7 . 1,35	– 1,62	Rigel.
			55,41					5 . 30 . 9,47	– 1,84	Σ 758. *np.*
			23,61	38,49	14,88			6 . 22 . 37,67	+ 19,03	δ Ursæ Min. SP.
			11,99	25,29	13,30			6 . 25 . 26,05	– 27,47	51 (Hev.) Cephei.
			53,25	7,35	14,10			7 . 31 . 7,31	– 2,50	Procyon.
			30,82	44,94	14,12			7 . 35 . 44,88	– 2,93	Pollux.
			41,02	55,04	14,02			9 . 19 . 55,09	– 2,70	α Hydræ.
			33,15					9 . 21 . 47,22		Vesta.
			15,49			0,05	14,09	4 . 24 . 29,59		Σ 559. *p.*
			42,76	56,78	14,02			4 . 26 . 56,86	– 1,66	Aldebaran.
			47,22	1,32	14,10			5 . 7 . 1,32	– 1,60	Rigel.
			55,41					5 . 30 . 9,51	– 1,82	Σ 758. *np.*
			49,56					5 . 48 . 3,66	– 2,72	β Aurigæ.
			25,12	38,86	13,74			6 . 22 . 39,22	+ 18,66	δ Ursæ Min. SP.
			10,92	24,84	13,92			6 . 25 . 25,02	– 27,02	51 (Hev.) Cephei.
			23,25	37,42	14,17			7 . 24 . 37,36	– 2,97	Castor.
			53,20	7,33	14,13			7 . 31 . 7,31	– 2,48	Procyon.
			30,86	44,93	14,07			7 . 35 . 44,97	– 2,92	Pollux.
			46,72					9 . 21 . 0,83		Vesta.
			42,61	56,94	14,33	0,07	14,27	22 . 56 . 56,95	– 0,25	α Pegasi.
			23,68					23 . 9 . 38,02		⊙'s center.
			2,85	17,24	14,39		14,34	0 . 0 . 17,19	– 0,19	α Andromedæ.
			6,62	20,97	14,35			1 . 58 . 20,97	– 0,75	α Arietis.
			51,43	5,74	14,31			2 . 54 . 5,78	– 0,99	α Ceti.
			36,66			0,07		3 . 33 . 51,01		☽ 1 L.
			26,58	39,89	13,31			6 . 22 . 40,94	+ 17,63	δ Ursæ Min. SP.
			8,34	23,61	15,27			6 . 25 . 22,70	– 25,79	51 (Hev.) Cephei.
			30,49	44,88	14,39			7 . 35 . 44,85	– 2,87	Pollux.
			35,90					9 . 18 . 50,27		Vesta.
			42,27	56,71	14,44	0,06	14,41	4 . 26 . 56,69	– 1,59	Aldebaran.
			54,74					4 . 29 . 9,16		☽ 1 L.
			30,40					4 . 53 . 44,82	– 1,80	ι Tauri.
			46,83	1,25	14,42			5 . 7 . 1,25	– 1,53	Rigel.
			38,42					5 . 9 . 52,84	– 1,91	*n* Tauri.
			9,97	24,36	14,39			5 . 16 . 24,39	– 2,06	β Tauri.
			49,08					5 . 48 . 3,50	– 2,63	β Aurigæ.
			25,87	40,21	14,34			6 . 22 . 40,30	+ 17,31	δ Ursæ Min. SP.
			9,46	23,24	13,78			6 . 25 . 23,89	25,42	51 (Hev.) Cephei.
			52,87	7,28	14,41			7 . 31 . 7,30	– 2,43	Procyon.
			30,45	44,87	14,42			7 . 35 . 44,88	– 2,86	Pollux.

March 5. 23^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Mar. 16	α Pegasi..........	58,4	12,3	26,0	40,2	54,0	8,0	22 . 57 . 22,0		22 . 56 . 40,12	G.
Mar. 17	☉ 1 L............	18,8	32,2	45,8	59,2	13,0	26,3	23 . 45 . 40,1		23 . 44 . 59,35	G.
	☉ 2 L............	27,9	41,5	54,7	8,3	22,0	35,3	23 . 47 . 49,0		23 . 47 . 8,39	G.
	Polaris M.........	0.13,2	0.58,0	1.40,8	2.21,2	3. 4,6	3.47,4	1 . 4 . 31,0	– 1,42	1 . 2 . 20,89	G.
	ω¹ Geminorum....	51,8	6,8	21,3	36,3	51,0	5,8	6 . 53 . 20,4		6 . 52 . 36,20	G.
	Castor............	32,4	48,5	4,2	20,4	36,3	52,2	7 . 25 . 8,2		7 . 24 . 20,31	G.
	Procyon..........	9,5	23,0	36,4	50,0	3,8	17,0	7 . 31 . 30,8		7 . 30 . 50,07	G.
	Pollux............	42,0	57,4	12,4	28,0	43,0	58,7	7 . 36 . 13,9		7 . 35 . 27,92	G.
	α Hydræ..........	57,0	10,4	24,0	37,9	51,2	5,0	9 . 20 . 18,2		9 . 19 . 37,67	G.
	β Leonis..........	6,8	21,0	34,8	49,0	2,9	16,8	11 . 41 . 30,9		11 . 40 . 48,89	G.
	ψ Virginis.......	16,1	30,1	43,4	57,3	11,0	24,8	12 . 46 . 38,1		12 . 45 . 57,26	G.
	Polaris SP. M. ...	59.36,2	0.19,8	1. 2,4	1.45,0	2.28,6	3.10,6	13 . 3 . 54,2	+ 1,42	13 . 1 . 46,68	G.
	☽ 2 L............	20,7	35,1	49,0	3,8	18,1	32,4	13 . 18 . 46,7		13 . 18 . 3,68	G.
	x Virginis........	24,1	38,3	52,3	6,8	20,9	35,0	13 . 41 . 49,1		13 . 41 . 6,64	G.
	κ Virginis........	36,2	50,0	3,3	17,2	31,0	44,4	14 . 4 . 58,0		14 . 4 . 17,16	G.
Mar. 18	(a) ☉ 1 L............	......	......	......	37,7	51,4	4,7	23 . 49 . 18,3	– 20,27	23 . 48 . 37,76	C.
	☉ 2 L............	......	......	33,1	46,8	0,3	13,7	23 . 51 . 27,2	– 13,49	23 . 50 . 46,73	C.
	(b) Polaris M.........	0.14,0	0.58,6	1.41,0	2.23,0	3. 6,8	3,50,0	1 . 4 . 32,8	– 1,42	1 . 2 . 22,32	G.
	α Arietis..........	19,9	34,6	48,8	3,8	18,0	32,6	1 . 58 . 47,4		1 . 58 . 3,58	G.
	γ Orionis..........	46,1	0,0	13,2	27,1	40,7	......	5 . 16	+ 13,54	5 . 16 . 26,96	G.
	125 Tauri.........	0,1	15,3	30,0	45,1	0,2	15,1	5 . 30 . 30,1		5 . 29 . 45,13	G.
	α Orionis.........	44,0	57,7	11,0	25,0	38,5	52,0	5 . 47 . 5,6		5 . 46 . 24,83	G.
	(c) Piazzi VI. 62.....	52,4	7,0	21,2	36,1	50,4	4,9	6 . 12 . 19,1		6 . 11 . 35,87	G.
	Σ 953............	37,8	51,6	5,1	18,9	32,4	46,0	6 . 32 . 59,8		6 . 32 . 18,80	G.
	α Hydræ..........	56,4	10,0	23,3	37,2	50,9	4,3	9 . 20 . 18,0		9 . 19 . 37,16	G.
	Regulus..........	4,1	18,0	31,8	45,7	59,6	13,3	10 . 0 . 27,0		9 . 59 . 45,64	G.
Mar. 20	☉ 1 L............	13,2	26,9	40,1	54,0	7,3	20,9	23 . 56 . 34,4		23 . 55 . 53,83	G.
	☉ 2 L............	22,0	35,7	49,0	2,6	16,1	29,8	23 . 58 . 43,1		23 . 58 . 2,61	G.
	Castor............	31,0	47,1	2,8	19,0	34,8	50,7	7 . 25 . 6,6		7 . 24 . 18,86	G.
	Procyon..........	8,0	21,5	35,0	48,7	2,0	15,8	7 . 31 . 29,0		7 . 30 . 48,57	G.
	Pollux............	......	......	......	26,3	41,8	57,0	7 . 36 . 12,2	– 22,98	7 . 35 . 26,35	G.
	φ² Cancri. *sp*......	15,7	31,0	46,0	1,2	16,5	31,7	8 . 17 . 46,9		8 . 17 . 1,28	G.
	Σ 1244............	58,3	17,0	35,2	53,2	12,0	30,0	8 . 27 . 48,2		8 . 26 . 53,41	G.
Mar. 21	(d) ☉ 1 L............	51,2	4,9	18,0	32,0	45,2	58,8	0 . 0 . 12,3		23 . 59 . 31,77	G.
	☉ 2 L............	0,1	13,5	27,0	40,6	54,1	7,6	0 . 2 . 21,0		0 . 1 . 40,55	G.
	ψ Leonis..........	12,6	26,8	40,6	54,7	8,3	22,1	9 . 35 . 36,2		9 . 34 . 54,47	G.
	(e) π Leonis..........	57,8	11,3	24,8	38,7	52,1	5,9	9 . 52 . 19,4		9 . 51 . 38,57	G.
	(e) Regulus	2,8	16,7	30,4	44,1	58,1	12,0	10 . 0 . 25,7		9 . 59 . 44,26	G.
Mar. 22	☉ 1 L............	29,0	42,4	55,7	9,5	23,0	36,5	0 . 3 . 50,1		0 . 3 . 9,46	G.
	☉ 2 L............	37,8	51,2	4,7	18,3	31,8	45,2	0 . 5 . 58,8		0 . 5 . 18,26	G.
Mar. 23	(f) ☉ 1 L............	6,6	20,1	33,6	47,1	0,7	14,1	0 . 7 . 27,8		0 . 6 . 47,15	G.
	ε Geminorum.....	14,0	29,0	43,7	58,8	13,6	......	6 . 34	+ 14,88	6 . 33 . 58,70	G.
	ω¹ Geminorum....	48,6	3,8	18,2	33,2	48,1	2,8	6 . 53 . 17,8		6 . 52 . 33,21	G.
	Castor	29,4	45,6	1,2	17,4	33,3	49,1	7 . 25 . 5,1		7 . 24 . 17,30	G.
	Procyon	6,7	20,1	33,3	47,1	0,8	14,1	7 . 31 . 27,6		7 . 30 . 47,10	G.
	Pollux	39,0	54,2	9,4	25,0	40,0	55,5	7 . 36 . 10,8		7 . 35 . 24,84	G.
	φ² Cancri..........	14,1	29,5	44,5	0,0	15,1	30,1	8 . 17 . 45,3		8 . 16 . 59,80	G.
	(c) Σ 1244............	......	15,7	33,6	52,1	10,1	28,6	8 . 27 . 46,7	– 9,10	8 . 26 . 52,03	G.
	(g) ✱ N.P.D. 69°. 51′.	10,3	25,0	39,0	53,2	8,0	22,2	9 . 21 . 36,6		9 . 20 . 53,47	G.
	Regulus..........	1,9	15,9	29,2	43,4	57,0	10,9	10 . 0 . 24,8		9 . 59 . 43,30	G.
	(g) ✱ N.P.D. 80°. 17′.	6,3	20,1	33,6	47,3	1,2	14,9	10 . 54 . 28,2		10 . 53 . 47,37	G.
	(h) Σ 1507............	0,2	14,2	27,6	41,3	55,0	8,7	10 . 58 . 22,2		10 . 57 . 41,31	G.
Mar. 24	(i) ☉ 1 L............	44,1	58,0	11,2	24,9	38,5	51,7	0 . 11 . 5,4		0 . 10 . 24,83	G.
	(i) ☉ 2 L............	53,0	6,6	19,9	33,6	47,1	0,3	0 . 13 . 14,1		0 . 12 . 33,51	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Seconds not taken from the clock: 23ˢ have been added.
(b) Faint from thin cirri clouds.
(c) Not seen double. (d) Misty.
(e) Cloudy.
(f) The other limb was clouded. (g) Very faint.
(h) Extremely faint: the observer thought it appeared double, but observed it as single.
(i) Tremulous.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,50	− 4,20	+ 5,05	40,08	57,04	16,96	0,46	16,46	22 . 56 . 56,98	− 0,35	α Pegasi.
			} 3,94					23 . 46 . 20,86		⊙'s center.
			3,52	20,80	17,28		16,92	1 . 2 . 20,46	+ 39,49	Polaris M.
			36,07					6 . 52 . 53,12	− 2,41	ω¹ Geminorum.
			20,10	37,20	17,10			7 . 24 . 37,16	− 2,75	Castor.
			50,10	7,15	17,05			7 . 31 . 7,16	− 2,30	Procyon.
			27,74	44,73	16,99			7 . 35 . 44,81	− 2,72	Pollux.
			37,80	54,95	17,15			9 . 19 . 54,90	− 2,61	α Hydræ.
			48,83	5,93	17,10			11 . 41 . 5,97	− 3,02	β Leonis.
			57,39					12 . 46 . 14,55	− 2,90	ψ Virginis.
			4,23	20,71	16,48			13 . 2 . 21,40	+ 39,58	Polaris SP. M.
			3,85					13 . 18 . 21,02		☽ 2 L.
			6,83					13 . 41 . 24,01	− 2,90	x Virginis.
			17,30					14 . 4 . 34,49	− 2,77	κ Virginis.
			} 42,32			0,48	16,91	23 . 49 . 59,71		⊙'s center.
			4,95	20,63	15,68		17,39	1 . 2 . 22,36	+ 39,66	Polaris M.
			3,46	20,88	17,42			1 . 58 . 20,89	− 0,66	α Arietis.
			26,97					5 . 16 . 44,47	− 1,58	γ Orionis.
			44,98					5 . 30 . 2,48	− 1,90	125 Tauri.
			24,84	42,19	17,35			5 . 46 . 42,34	− 1,77	α Orionis.
			35,76					6 . 11 . 53,27	− 2,10	Piazzi VI. 62.
			18,80					6 . 32 . 36,32	− 2,04	Σ 953.
			37,29	54,94	17,65			9 . 19 . 54,87	− 2,60	α Hydræ.
			45,61	3,26	17,65			10 . 0 . 3,20	− 2,92	Regulus.
			} 58,29			0,47	17,89	23 . 57 . 16,65		⊙'s center.
			18,65	37,15	18,50		18,36	7 . 24 . 37,15	− 2,70	Castor.
			48,60	7,11	18,51			7 . 31 . 7,11	− 2,26	Procyon.
			26,17	44,68	18,51			7 . 35 . 44,68	− 2,67	Pollux.
			1,11					8 . 17 . 19,63	− 2,86	φ² Cancri. *sp.*
			53,07					8 . 27 . 11,59	− 3,33	Σ 1244.
			} 36,23			0,52	18,79	0 . 0 . 55,02		⊙'s center.
			54,42					9 . 35 . 13,42	− 2,88	ψ Leonis.
			38,57					9 . 51 . 57,57	− 2,85	π Leonis.
			44,23	3,24	19,01					Regulus.
			} 13,93				19,31	0 . 4 . 33,24		⊙'s center.
		+ 3,61	47,13			0,54	19,95	0 . 7 . 7,08		⊙ 1 L.
	− 6,00		58,38					6 . 34 . 18,48	− 2,21	ε Geminorum.
			32,91					6 . 52 . 53,01	− 2,30	ω¹ Geminorum.
			16,92	37,10	20,18			7 . 24 . 37,04	− 2,65	Castor.
			46,97	7,06	20,09			7 . 31 . 7,09	− 2,21	Procyon.
			24,49	44,63	20,14			7 . 35 . 44,61	− 2,62	Pollux.
			59,47					8 . 17 . 19,61	− 2,80	φ² Cancri.
			51,51					8 . 27 . 11,65	− 3,27	Σ 1244.
			53,21					9 . 21 . 13,37	− 2,90	⁎ N.P.D. 69°.51′.
			43,11	3,23	20,12			10 . 0 . 3,28	− 2,89	Regulus.
			47,21					10 . 54 . 7,41	− 2,97	⁎ N.P.D. 80°. 17′.
			41,16					10 . 58 . 1,36	− 2,96	Σ 1507.
			} 29,08			0,58	20,44	0 . 11 . 49,52		⊙'s center.

March 12. 22h, and March 23. 22h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Mar. 24	α Hydræ..........	53,4	7,0	20,6	34,2	48,0	1,7	9 . 20 . 15,0		9 . 19 . 34,27	G.
	Regulus..........	1,1	15,2	28,8	42,9	56,6	10,3	10 . 0 . 24,1		9 . 59 . 42,71	G.
	(a) ☽ 2 L.............	49,7	4,4	18,7	33,5	48,1	2,7	20 . 16 . 17,1		20 . 15 . 33,45	G.
	(b) α Pegasi.........	54,5	8,5	22,2	36,3	50,2	4,0	22 . 57 . 18,1		22 . 56 . 36,26	G.
Mar. 25	(b) ⊙ 1 L............	21,7	35,1	48,4	2,2	15,8	29,2	0 . 14 . 42,8		0 . 14 . 2,17	G.
	(b) ⊙ 2 L............	30,3	44,0	57,3	11,1	24,5	38,0	0 . 16 . 51,5		0 . 16 . 10,95	G.
	(c) Polaris M.........	0. 9,0	0.51,4	1.35,2	2.18,8	3. 1,8	3.44,2	1 . 4 . 26,6	− 1,42	1 . 2 . 16,72	G.
	Castor............	28,3	44,3	0,1	16,2	32,1	48,1	7 . 25 . 3,9		7 . 24 . 16,14	G.
	(d) Procyon..........	5,3	19,0	32,2	45,8	59,4	13,0	7 . 31 . 26,5		7 . 30 . 45,89	G.
	Pollux............	37,6	53,0	8,4	23,8	39,1	54,3	7 . 36 . 9,7		7 . 35 . 23,70	G.
	(e) ⁎ N.P.D. 69°. 51′.	......	......	37,8	52,6	6,7	21,1	9 . 21 . 35,5	− 14,33	9 . 20 . 52,41	G.
	ψ Leonis.........	10,5	24,7	38,2	52,7	6,2	20,1	9 . 35 . 34,0		9 . 34 . 52,34	G.
	π Leonis.........	55,7	9,2	22,8	36,4	50,0	3,8	9 . 52 . 17,2		9 . 51 . 36,44	G.
	Regulus..........	0,6	14,5	28,1	42,1	56,0	9,8	10 . 0 . 23,5		9 . 59 . 42,08	G.
	Polaris SP. M.....	59.29,0	0.12,8	0.54,6	1.37,2	2.20,2	3. 3,4	13 . 3 . 47,6	+ 1,42	13 . 1 . 39,25	G.
	Polaris M.........	0. 9,8	0.52,0	1.36,4	2.17,8	3. 1,2	3.44,6	1 . 4 . 27,2	− 1,42	1 . 2 . 17,01	G.
Mar. 27	(f) ⊙ 1 L............	37,0	50,4	3,9	17,5	31,1	44,5	0 . 21 . 58,0		0 . 21 . 17,49	G.
	(f) ⊙ 2 L............	45,3	59,4	12,6	......	......	......	0 . 23	+ 27,05	0 . 23 . 26,15	G.
	(g) α Hydræ.........	52,0	5,9	19,1	33,0	46,6	0,1	9 . 20 . 13,7		9 . 19 . 32,91	G.
	(f) Regulus..........	......	......	......	41,4	55,3	9,0	10 . 0 . 23,0	− 20,74	9 . 59 . 41,43	G.
Mar. 28	Procyon..........	4,6	18,0	31,4	45,2	58,6	12,0	7 . 31 . 25,7		7 . 30 . 45,07	G.
	Pollux............	37,0	52,2	7,3	22,9	38,0	53,5	7 . 36 . 8,9		7 . 35 . 22,83	G.
	α Hydræ.........	51,9	5,7	19,1	32,9	46,5	0,1	9 . 20 . 13,7		9 . 19 . 32,84	G.
	(e) α Pegasi.........	......	......	21,3	35,5	49,3	......	22 . 57 . 17,0	− 10,41	22 . 56 . 35,36	G.
	α Andromedæ....	9,6	25,0	40,0	55,4	10,8	26,1	0 . 0 . 41,3		23 . 59 . 55,46	G.
Mar. 29	⊙ 1 L............	52,7	6,1	19,7	33,3	46,8	0,1	0 . 29 . 13,7		0 . 28 . 33,20	G.
	⊙ 2 L............	1,6	15,1	28,4	42,2	55,6	9,1	0 . 31 . 22,7		0 . 30 . 42,10	G.
	(h) α Arietis.........	15,0	29,5	43,9	59,0	13,5	28,1	1 . 58 . 42,8		1 . 57 . 58,83	G.
Apr. 5	(f) ⊙ 1 L............	......	30,4	43,7	57,5	11,1	24,6	0 . 54 . 38,3	− 6,78	0 . 53 . 57,49	G.
	(f) ⊙ 2 L............	25,9	39,4	52,8	6,5	20,1	33,6	0 . 56 . 47,2		0 . 56 . 6,50	G.
	☽ 1 L............	46,2	1,7	16,7	32,0	47,1	2,2	5 . 7 . 17,6		5 . 6 . 31,93	G.
	(f) β Tauri...........	11,3	26,7	......	......	12,8	28,0	5 . 16 . 43,2	− 3,09	5 . 15 . 57,31	G.
	Regulus..........	55,0	8,6	22,5	36,4	50,1	4,1	10 . 0 . 18,0		9 . 59 . 36,39	G.
	(i) Piazzi X. 67......	13,9	27,4	41,0	55,0	8,5	22,1	10 . 17 . 35,8		10 . 16 . 54,81	G.
	ι Leonis..........	39,2	53,1	6,6	20,3	34,4	48,0	11 . 16 . 1,8		11 . 15 . 20,48	G.
	(k) 83 Leonis. *np*.....	44,2	57,7	11,1	24,8	38,1	51,5	11 . 19 . 5,1		11 . 18 . 24,64	G.
	β Leonis.........	......	11,2	25,1	39,2	53,2	7,0	11 . 41 . 21,1	− 6,99	11 . 40 . 39,14	G.
	Polaris SP.	......	......	53. 8,0	1.33,2	10. 7,0	18.28,2	13 . 26 . 58,4	− 8 . 26,58	13 . 1 . 36,38	G.
	Spica............	50,5	4,5	18,0	32,0	45,7	59,1	13 . 17 . 13,1		13 . 16 . 31,84	G.
Apr. 8	(l) ⊙ 1 L............	11,9	25,7	39,1	52,8	6,5	20,0	1 . 5 . 33,8		1 . 4 . 52,83	G.
	(l) ⊙ 2 L............	21,0	34,8	48,1	2,0	15,6	29,1	1 . 7 . 42,8		1 . 7 . 1,91	G.
	Castor............	20,4	36,4	52,2	8,4	24,2	40,1	7 . 24 . 55,9		7 . 24 . 8,23	G.
	(m) Procyon..........	57,5	......	......	38,1	51,9	5,2	7 . 31	− 0,03	7 . 30 . 38,14	G.
Apr. 9	(m) α Andromedæ....	2,0	17,2	......	48,0	3,0	18,3	0 . 0 . 33,5	− 2,57	23 . 59 . 47,76	G.
Apr. 10	(n) ι Leonis..........	35,8	49,9	3,4	17,3	30,9	44,4	11 . 15 . 58,5		11 . 15 . 17,17	G.
	(m) β Leonis.........	53,8	8,1	21,6	......	50,1	4,0	11 . 41 . 17,9	+ 0,01	11 . 40 . 35,93	G.
	(o) Σ 1633. *sp*........	33,9	49,2	4,1	19,6	35,0	50,1	12 . 13 . 5,3		12 . 12 . 19,60	G.
	(p) Piazzi XII. 202. *nf*.	......	13,4	27,6	42,1	56,2	10,5	12 . 44 . 25,0	− 7,16	12 . 43 . 41,97	G.
	(q) Σ 1690. *np*........	2,1	15,4	28,9	42,7	56,1	9,5	12 . 48 . 23,1		12 . 47 . 42,54	G.
	ε Virginis.........	13,8	27,2	41,1	55,0	8,8	22,2	12 . 54 . 36,1		12 . 53 . 54,89	G.
	(r) Polaris SP. M.....	59.20,4	0. 4,8	0.47,0	1.29,0	2.11,6	2.53,6	13 . 3 . 36,0	+ 1,42	13 . 1 . 30,33	G.
	⁎ N.P.D. 97°. 13′.	11,3	25,1	38,4	52,2	5,8	19,4	13 . 7 . 33,0		13 . 6 . 52,17	G.
	(i) Σ 1734............	36,1	49,8	3,1	16,9	30,3	43,7	13 . 12 . 57,3		13 . 12 . 16,74	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Faint. (*b*) Unsteady. (*c*) Much clouded. The coincidence reading 10ʳ,169 was used by mistake for 10ʳ,179, in consequence of which 0ˢ,4 has been *added* to the noted times of transit across the micometer-wire. (*d*) Indefinite. (*e*) Very faint. (*f*) Cloudy. (*g*) Great motion. (*h*) The Temperature, which had fallen on the 25th, rose after this day. (*i*) Not seen double. (*k*) The south following star is Piazzi XI. 71. (*l*) Noisy wind. (*m*) Clouds passing. Depression of Temperature after the 8th. (*n*) Faint and indefinite. (*o*) Often cloudy. (*p*) The other star is Piazzi XII. 201. (*q*) A faint companion. (*r*) Large, unsteady disk: very unsatisfactory observation.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
– 0,50	– 6,00	+ 3,61	34,25	54,89	20,64	0,58	20,44			α Hydræ.
			42,52	3,22	20,70					Regulus.
			33,51			0,50	20,61	20 . 15 . 54,54		☽ 2 L.
			36,07	57,14	21,07			22 . 56 . 57,16	– 0,45	α Pegasi.
			6,45				21,11	0 . 15 . 27,57		☉'s center.
			57,84	19,69	21,85			1 . 2 . 18,97	+ 40,60	Polaris M.
			15,76	37,06	21,30	0,50	21,11	7 . 24 . 37,02	– 2,61	Castor.
			45,76	7,03	21,27			7 . 31 . 7,03	– 2,18	Procyon.
			23,35	44,59	21,24			7 . 35 . 44,62	– 2,58	Pollux.
			52,15					9 . 21 . 13,45	– 2,88	✱ N.P.D. 69°. 51′.
			52,13					9 . 35 . 13,44	– 2,84	ψ Leonis.
			36,29					9 . 51 . 57,60	– 2,82	π Leonis.
			41,89	3,22	21,33			10 . 0 . 3,21	– 2,88	Regulus.
			58,00	19,59	21,59			1 . 2 . 19,38	+ 40,70	Polaris SP. M.
			58,13	19,49	21,36		21,61	1 . 2 . 19,76	+ 40,80	Polaris M.
			21,71			0,16	21,90	0 . 22 . 43,61		☉'s center.
			32,89	54,85	21,96					α Hydræ.
			41,24	3,20	21,96					Regulus.
	– 5,91		44,95	6,98	22,03	0,14	21,98	7 . 31 . 6,97	– 2,13	Procyon.
			22,49	44,54	22,05			7 . 35 . 44,51	– 2,53	Pollux.
			32,82	54,84	22,02			9 . 19 . 54,85	– 2,50	α Hydræ.
			35,17	57,20	22,03	0,22	21,96	22 . 56 . 57,34	– 0,51	α Pegasi.
			55,12	17,35	22,23			0 . 0 . 17,30	– 0,30	α Andromedæ.
			37,54				22,18	0 . 29 . 59,72		☉'s center.
			58,55	20,83	22,28			1 . 58 . 20,75	– 0,61	α Arietis.
		+ 2,66	1,82			0,67	26,75	0 . 55 . 28,60		☉'s center.
			31,60					5 . 6 . 58,49		☽ 1 L.
			56,94	23,85	26,91			5 . 16 . 23,84	– 1,55	β Tauri.
			36,17	3,12	26,95			10 . 0 . 3,20	– 2,78	Regulus.
			54,60					10 . 17 . 21,64	– 2,81	Piazzi X. 67.
			20,27					11 . 15 . 47,34	– 2,98	ι Leonis.
			24,47					11 . 18 . 51,54	– 2,93	83 Leonis. *np.*
			38,89	5,95	27,06			11 . 41 . 5,97	– 3,04	β Leonis.
			53,46	19,41	25,95			13 . 2 . 20,57	+ 40,88	Polaris SP.
			31,78	58,97	27,19			13 . 16 . 58,90	– 3,10	Spica.
	– 6,83		57,14			0,66	28,75	1 . 6 . 25,92		☉'s center.
			7,75	36,79	29,04					Castor.
			37,93	6,80	28,87					Procyon.
			47,33	17,50	30,17	0,37	30,16	0 . 0 . 17,49	– 0,45	α Andromedæ.
			16,91					11 . 15 . 47,24	– 2,96	ι Leonis.
			35,63	5,94	30,31			11 . 41 . 5,97	– 3,03	β Leonis.
			19,17					12 . 12 . 49,52	– 3,21	Σ 1633. *sp.*
			41,62					12 . 44 . 11,98	– 3,13	Piazzi XII. 202. *nf.*
			42,41					12 . 48 . 12,77	– 3,08	Σ 1690. *np.*
			54,62					12 . 54 . 24,98	– 3,08	ε Virginis.
			49,19	19,59	30,40			1 . 2 . 19,55	+ 40,70	Polaris SP. M.
			52,06					13 . 7 . 22,42	– 3,11	✱ N.P.D. 97°. 13′.
			16,53					13 . 12 . 46,89	– 3,08	Σ 1734.

April 2. 22^h, and April 10. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Apr. 10	Spica	47,7	1,4	14,8	28,9	42,3	56,0	13 . 17 . 9,9		13 . 16 . 28,72	G.
	α Pegasi	......	......	13,3	27,3	41,2	55,0	22 . 57 . 9,1	− 13,88	22 . 56 . 27,30	G.
	α Andromedæ	1,5	17,0	32,0	47,5	2,8	18,0	0 . 0 . 33,3		23 . 59 . 47,45	G.
	(a) Polaris M.	0. 0,8	0.44,0	1.26,6	2.10,6	2.54,0	3.35,0	1 . 4 . 16,2	− 1,42	1 . 2 . 8,18	G.
Apr. 11	(b) ☉ 1 L.	9,1	22,8	36,1	50,2	3,9	17,3	1 . 16 . 31,0		1 . 15 . 50,05	G.
	(b) ☉ 2 L.	18,4	32,2	45,8	59,5	13,2	26,9	1 . 18 . 40,6		1 . 17 . 59,52	G.
	α Arietis	6,9	21,4	35,8	50,9	5,2	20,0	1 . 58 . 34,4		1 . 57 . 50,65	G.
	(c) α Hydræ	43,4	57,1	10,5	24,3	......	......	9 . 19	+ 20,39	9 . 19 . 24,22	G.
Apr. 12	(c) o^2 Cancri	38,6	52,7	......	......	35,0	48,8	8 . 49 . 2,8	− 2,83	8 . 48 . 20,75	G.
	Regulus	51,0	5,1	18,8	32,7	46,4	0,2	10 . 0 . 14,1		9 . 59 . 32,61	G.
	τ Leonis	43,8	57,1	10,5	24,1	37,8	51,0	11 . 20 . 4,7		11 . 19 . 24,14	G.
	υ Leonis	46,7	0,0	13,2	27,0	40,5	53,8	11 . 29 . 7,4		11 . 28 . 26,95	G.
	β Leonis	53,6	7,6	21,2	35,6	49,5	3,5	11 . 41 . 17,3		11 . 40 . 35,47	G.
	☽ 1 L.	2,0	16,0	29,7	43,9	57,7	11,6	11 . 45 . 25,5		11 . 44 . 43,77	G.
Apr. 13	Regulus	51,0	4,9	18,3	32,4	46,0	0,0	10 . 0 . 13,9		9 . 59 . 32,36	G.
	β Leonis	53,2	7,4	21,1	35,2	49,3	3,1	11 . 41 . 17,1		11 . 40 . 35,20	G.
	η Virginis	44,0	57,6	11,0	24,6	38,2	51,7	12 . 12 . 5,3		12 . 11 . 24,63	G.
	(d) q Virginis	32,1	45,5	59,2	13,0	26,7	40,1	12 . 25 . 54,0		12 . 25 . 12,94	G.
Apr. 16	(e) Polaris M.	59.57,8	0.38,6	1.25,0	2. 6,0	2.52,2	3.31,8	1 . 4 . 15,0	− 1,42	1 . 2 . 5,21	G.
Apr. 17	☉ 1 L.	12,1	26,1	39,5	53,4	7,2	21,1	1 . 38 . 34,6		1 . 37 . 53,43	G.
	(f) ☉ 2 L.	22,1	36,1	49,3	3,6	17,2	30,6	1 . 40 . 44,7		1 . 40 . 3,37	G.
	o^2 Cancri	36,1	50,2	4,2	18,5	32,2	46,4	8 . 49 . 0,6		8 . 48 . 18,32	G.
	α Hydræ	40,9	54,4	8,0	21,9	35,5	49,0	9 . 20 . 2,7		9 . 19 . 21,77	G.
	Regulus	49,0	2,8	16,3	30,2	44,1	57,9	10 . 0 . 11,8		9 . 59 . 30,30	G.
	(g) ✳ N.P.D. 80°.17′.	53,3	7,0	20,6	34,4	48,1	2,0	10 . 54 . 15,4		10 . 53 . 34,40	G.
	(h) Σ 1507. *np.*	47,7	1,1	14,7	28,2	42,0	55,5	10 . 58 . 9,1		10 . 57 . 28,33	G.
	(i) Σ 1521. *np.*	39,7	55,1	10,3	25,9	41,1	56,4	11 . 7 . 11,9		11 . 6 . 25,77	G.
	(k) ν Ursæ Majoris	41,0	57,2	13,1	29,7	46,1	2,0	11 . 10 . 18,3		11 . 9 . 29,63	G.
	(l) 83 Leonis. *np.*	38,0	51,5	5,0	18,7	32,0	45,2	11 . 18 . 59,1		11 . 18 . 18,50	G.
	Σ 1565. *sf.*	14,1	28,3	42,4	57,1	11,5	25,8	11 . 31 . 40,1		11 . 30 . 57,05	G.
	β Leonis	51,2	5,2	19,0	33,1	47,1	1,0	11 . 41 . 15,2		11 . 40 . 33,11	G.
	B.A.C. 4006	50,2	3,9	17,1	31,1	44,4	57,9	11 . 43 . 11,3		11 . 42 . 30,84	G.
	(m) Polaris SP. M.	59.20,8	59.59,6	0.42,2	1.22,8	2.11,2	2.53,8	13 . 3 . 33,6	+ 1,42	13 . 1 . 27,71	G.
	Spica	44,6	58,5	12,0	25,8	39,4	53,1	13 . 17 . 7,0		13 . 16 . 25,77	G.
	(n) Polaris M.	59.59,0	0.38,8	1.22,4	2. 7,6	2.51,4	3.35,0	1 . 4 . 15,0	− 1,42	1 . 2 . 5,61	G.
Apr. 18	(o) ☉ 1 L.	54,0	7,8	21,3	35,3	49,0	2,9	1 . 42 . 16,5		1 . 41 . 35,26	G.
	(o) ☉ 2 L.	4,2	17,9	31,4	45,3	59,1	12,8	1 . 44 . 26,2		1 . 43 . 45,27	G.
	p^3 Leonis	42,2	55,9	9,3	23,0	36,5	50,0	10 . 59 . 3,5		10 . 58 . 22,91	G.
	(p) ν Ursæ Majoris	40,1	56,5	12,6	29,0	45,1	1,6	11 . 10 . 17,7		11 . 9 . 28,95	G.
	β Leonis	50,7	4,6	18,4	32,4	46,6	0,6	11 . 41 . 14,5		11 . 40 . 32,54	G.
	Polaris SP. M.	59.18,8	0. 2,0	0.46,2	1.29,6	2.12,8	2.56,0	13 . 3 . 40,0	+ 1,42	13 . 1 . 30,76	G.
	Arcturus	16,7	31,0	45,2	59,8	14,1	28,4	14 . 8 . 42,7		14 . 7 . 59,70	G.
	ε Bootis	51,7	7,0	22,0	37,2	52,6	7,8	14 . 38 . 22,9		14 . 37 . 37,32	G.
Apr. 19	☉ 1 L.	35,9	49,8	3,4	17,2	30,8	44,8	1 . 45 . 58,5		1 . 45 . 17,20	G.
	☉ 2 L.	46,0	59,8	13,3	27,3	41,1	54,6	1 . 48 . 8,5		1 . 47 . 27,23	G.
	(q) Spica	43,2	57,0	......	24,7	38,0	51,9	13 . 17 . 5,7	− 2,30	13 . 16 . 24,45	G.
Apr. 20	(a) ☉ 1 L.	17,8	31,8	45,2	59,1	13,1	26,5	1 . 49 . 40,9		1 . 48 . 59,20	G.
	(a) ☉ 2 L.	28,2	42,1	55,8	9,6	23,2	37,1	1 . 51 . 50,9		1 . 51 . 9,56	G.
	Rigel	44,8	58,4	11,8	25,7	39,3	52,9	5 . 7 . 6,4		5 . 6 . 25,61	G.
	β Tauri	3,0	18,3	33,3	49,0	4,2	19,7	5 . 16 . 35,0		5 . 15 . 48,93	G.
	Regulus	46,5	0,4	14,0	28,1	41,9	55,7	10 . 0 . 9,4		9 . 59 . 28,00	G.
	Σ 1507	45,3	59,0	12,2	26,6	39,9	53,2	10 . 58 . 7,0		10 . 57 . 26,10	G.
	ν Ursæ Majoris	38,6	55,1	11,0	27,2	43,7	59,8	11 . 10 . 16,0		11 . 9 . 27,34	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA.*

(a) Unsteady. (b) Bad definition. (c) Cloudy. (d) After the 13th, the Temperature rose. The clock's rate appears to be affected by the changes of Temperature. (e) Very cloudy and difficult. (f) The last 4 wires without dark glass, and doubtful. (g) Faint. (h) A minute companion. (i) Magnitudes nearly equal. (k) The comes just distinguishable. (l) Not less than 7th magnitude. (m) Intervals irregular. (n) Faint and unsteady. (o) Circumstances good. (p) Not seen double. (q) Bad observation: not used for clock-error. Wire III. was written down 10,1, and wire VII. 4,7. The former is rejected.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,50	− 6,83	+ 2,66	28,63	59,01	30,38	0,37	30,16	13 . 16 . 58,99	− 3,14	Spica.
			27,01	57,42	30,41	0,23	30,25	22 . 56 . 57,48	− 0,73	α Pegasi.
			47,02	17,52	30,50		30,48	0 . 0 . 17,50	− 0,47	α Andromedæ.
			49,04	19,59	30,55			1 . 2 . 19,53	+ 40,70	Polaris M.
			} 54,56					1 . 17 . 25,05		☉'s center.
			50,28	20,83	30,55			1 . 58 . 20,78	− 0,61	α Arietis.
			24,12	54,67	30,55			9 . 19 . 54,69	− 2,33	α Hydræ.
			20,45			0,20	30,65	8 . 48 . 51,17	− 2,44	o^2 Cancri.
			32,34	3,05	30,71					Regulus.
			23,93					11 . 19 . 54,67	− 2,91	τ Leonis.
			26,78					11 . 28 . 57,53	− 2,91	υ Leonis.
			35,17	5,93	30,76					β Leonis.
			43,64					11 . 45 . 14,39		☽ 1 L.
	− 6,01		32,13	3,04	30,91	0,21	30,86			Regulus.
			34,94	5,93	30,99					β Leonis.
			24,49					12 . 11 . 55,46	− 3,02	η Virginis.
			12,87					12 . 25 . 43,84	− 3,06	q Virginis.
		+ 3,40	46,62	20,91	34,29	0,68	32,71	1 . 2 . 19,36	+ 39,38	Polaris M.
			} 58,23					1 . 39 . 30,99		☉'s center.
			18,09					8 . 48 . 51,05	− 2,37	o^2 Cancri.
			21,74	54,59	32,85			9 . 19 . 54,71	− 2,25	α Hydræ.
			30,10	2,99	32,89			10 . 0 . 3,09	− 2,65	Regulus.
			34,23					10 . 54 . 7,25	− 2,83	⁎ N.P.D. 80°. 17′.
			28,17					10 . 58 . 1,19	− 2,83	Σ 1507. *np.*
			25,43					11 . 6 . 58,45	− 3,09	Σ 1521. *np.*
			29,22					11 . 10 . 2,25	− 3,20	ν Ursæ Majoris.
			18,37					11 . 18 . 51,40	− 2,87	83 Leonis. *np.*
			56,78					11 . 31 . 29,82	− 3,03	Σ 1565. *sf.*
			32,88	5,91	33,03			11 . 41 . 5,92	− 3,00	β Leonis.
			30,78					11 . 43 . 3,82	− 2,92	B.A.C. 4006.
			46,15	21,08	34,93			13 . 2 . 19,23	+ 39,21	Polaris SP. M.
			25,75	59,05	33,30			13 . 16 . 58,84	− 3,18	Spica.
			47,02	21,23	34,21	0,71	33,38	1 . 2 . 20,43	+ 39,06	Polaris M.
			} 40,08					1 . 43 . 13,51		☉'s center.
			22,79					10 . 58 . 56,49	− 2,79	p^3 Leonis.
			28,53					11 . 10 . 2,24	− 3,19	ν Ursæ Majoris.
			32,31	5,90	33,59			11 . 41 . 6,04	− 2,99	β Leonis.
			49,20	21,37	32,17			13 . 2 . 22,97	+ 38,92	Polaris SP. M.
			59,43	33,26	33,83			14 . 8 . 33,23	− 3,07	Arcturus.
			36,98	10,90	33,92			14 . 38 . 10,79	− 3,06	ε Bootis.
			} 22,03				34,09	1 . 46 . 56,17		☉'s center.
			24,43	59,06	34,63	0,74	34,15			Spica.
			} 4,19				34,89	1 . 50 . 39,14		☉'s center.
			25,58	0,58	35,00			5 . 7 . 0,63	− 0,86	Rigel.
			48,59	23,64	35,05			5 . 16 . 23,64	− 1,34	β Tauri.
			27,80	2,95	35,15			10 . 0 . 3,00	− 2,61	Regulus.
			25,94					10 . 58 . 1,17	− 2,80	Σ 1507.
			26,92					11 . 10 . 2,15	− 3,17	ν Ursæ Majoris.

April 16. 22h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Apr. 20	83 Leonis. *np*.....	35,8	49,2	2,5	16,3	29,6	43,2	11 . 18 . 56,8		11 . 18 . 16,20	G.
	Σ 1565. *sf*........	11,9	26,1	40,3	55,0	9,1	23,4	11 . 31 . 37,7		11 . 30 . 54,79	G.
	β Leonis.........	49,0	3,0	16,5	31,0	44,9	59,0	11 . 41 . 12,9		11 . 40 . 30,90	G.
	B.A.C. 4006......	48,0	1,8	15,0	28,8	42,1	55,6	11 . 43 . 9,0		11 . 42 . 28,62	G.
	Spica............	42,4	56,2	9,9	23,9	37,3	51,1	13 . 17 . 4,8		13 . 16 . 23,66	G.
	(*a*) α Aquilæ........	53,3	7,0	20,6	34,2	48,1	1,5	19 . 43 . 15,1		19 . 42 . 34,26	G.
	β Aquilæ.........	22,0	35,7	49,1	2,6	16,5	30,0	19 . 47 . 43,3		19 . 47 . 2,74	G.
	☽ 2 L.............	59,1	14,0	28,3	43,2	58,0	12,6	19 . 57 . 27,3		19 . 56 . 43,21	G.
Apr. 21	p^3 Leonis.........	40,1	53,7	7,0	20,7	34,4	47,7	10 . 59 . 1,0		10 . 58 . 20,65	G.
	ξ Ursæ Majoris. *np*.	27,1	43,2	59,1	15,1	31,1	46,9	11 . 10 . 3,0		11 . 9 . 15,07	G.
	(*b*) Σ 1565. *sf*........	11,0	25,3	39,5	54,1	8,3	22,7	11 . 31 . 37,0		11 . 30 . 53,98	G.
	β Leonis.........	48,0	2,1	16,0	30,0	44,1	58,0	11 . 41 . 12,0		11 . 40 . 30,02	G.
	B.A.C. 4006......	47,1	0,9	14,1	28,0	41,3	54,8	11 . 43 . 8,2		11 . 42 . 27,77	G.
Apr. 22	Rigel............	......	......	10,2	24,1	37,6	51,1	5 . 7 . 4,9	− 13,60	5 . 6 . 23,98	G.
	β Tauri..........	1,3	16,7	31,9	47,4	2,8	18,0	5 . 16 . 33,3		5 . 15 . 47,35	G.
Apr. 24	(*c*) ☉ 1 L...........	11,6	25,5	39,0	53,1	6,5	20,8	2 . 4 . 34,8		2 . 3 . 53,04	G.
	(*c*) ☉ 2 L...........	22,3	36,5	50,0	4,1	17,9	31,7	2 . 6 . 45,6		2 . 6 . 4,01	G.
	Regulus..........	43,6	57,7	11,1	25,1	39,0	52,7	10 . 0 . 6,5		9 . 59 . 25,10	G.
	p^3 Leonis.........	......	51,4	4,8	18,6	32,0	45,3	10 . 58 . 59,0	− 6,74	10 . 58 . 18,44	G.
	ξ Ursæ Majoris. *np*.	25,0	41,0	56,8	13,0	29,0	44,9	11 . 10 . 1,0		11 . 9 . 12,96	G.
	(*d*) Σ 1566..........	9,7	24,1	38,4	53,1	7,7	22,1	11 . 32 . 36,8		11 . 31 . 53,13	G.
	β Leonis.........	46,1	0,0	13,8	28,0	42,0	56,0	11 . 41 . 9,9		11 . 40 . 27,97	G.
	B.A.C. 4006......	45,0	58,7	12,0	25,8	39,1	52,8	11 . 43 . 6,1		11 . 42 . 25,64	G.
	Spica............	39,7	53,6	7,0	21,0	34,7	48,2	13 . 17 . 2,0		13 . 16 . 20,88	G.
	Arcturus........	12,2	26,7	40,9	55,3	9,8	24,1	14 . 8 . 38,1		14 . 7 . 55,30	G.
Apr. 25	p^3 Leonis.........	37,1	50,8	4,1	17,5	31,2	44,6	10 . 58 . 58,3		10 . 58 . 17,66	G.
	(*d*) Σ 1566..........	9,0	23,5	37,9	52,3	7,0	21,4	11 . 32 . 36,0		11 . 31 . 52,44	G.
	β Leonis.........	45,2	59,2	13,3	27,0	41,4	55,1	11 . 41 . 9,1		11 . 40 . 27,19	G.
	(*b*) ε Bootis..........	46,9	2,0	17,2	32,5	47,9	3,0	14 . 38 . 18,1		14 . 37 . 32,51	G.
	α^2 Libræ.........	55,0	9,0	22,9	37,0	51,0	4,9	14 . 42 . 18,9		14 . 41 . 36,96	G.
Apr. 30	α Andromedæ....	50,3	5,8	21,0	36,1	51,7	6,9	0 . 0 . 22,2		23 . 59 . 36,29	G.
	(*e*) Polaris M.........	59.40,0	0.22,6	1. 5,4	1.48,4	2.32,2	3.13,0	1 . 3 . 56,6	+ 1,42	1 . 1 . 49,73	G.
	α Arietis.........	55,1	10,0	24,5	39,0	54,0	8,3	1 . 58 . 23,0		1 . 57 . 39,13	G.
May 1	☉ 1 L............	35,0	49,0	3,0	17,1	31,1	45,0	2 . 30 . 59,0		2 . 30 . 17,03	G.
	☉ 2 L............	47,0	1,0	14,9	28,8	43,1	56,8	2 . 33 . 10,8		2 . 32 . 28,92	G.
	(*f*) ☽ 1 L............	24,3	39,1	54,4	9,1	24,6	39,4	3 . 53 . 54,3		3 . 53 . 9,32	G.
	Aldebaran........	32,0	46,0	0,0	14,1	28,1	42,1	4 . 26 . 56,2		4 . 26 . 14,07	G.
	Rigel............	37,8	51,3	5,0	18,6	32,2	45,8	5 . 6 . 59,4		5 . 6 . 18,59	G.
	β Tauri..........	55,8	11,0	26,3	41,8	57,1	12,4	5 . 16 . 27,9		5 . 15 . 41,75	G.
	Regulus..........	39,1	53,0	6,9	20,7	34,7	48,1	10 . 0 . 2,0		9 . 59 . 20,64	G.
	ε Virginis........	1,2	15,1	28,8	42,6	56,4	10,0	12 . 54 . 23,9		12 . 53 . 42,57	G.
	(*g*) Polaris SP. M.....	59.32,8	0.16,8	1. 0,4	1.43,0	2.25,2	3. 8,0	13 . 3 . 50,0	− 1,42	13 . 1 . 40,89	G.
	✱ N.P.D. 97°. 13′.	59,5	13,1	26,7	40,1	53,9	7,4	13 . 7 . 21,0		13 . 6 . 40,24	G.
	(*d*) Σ 1742..........	59,0	12,3	25,8	39,5	53,0	6,4	13 . 16 . 19,9		13 . 15 . 39,42	G.
	✱ N.P.D. 97°. 3′..	21,8	35,4	49,0	2,4	16,2	29,7	13 . 22 . 43,2		13 . 22 . 2,53	G.
	(*d*) ✱ N.P.D. 97°. 49′.	44,8	58,4	11,9	25,6	39,3	52,8	13 . 26 . 6,5		13 . 25 . 25,61	G.
	m Virginis........	2,9	16,7	30,1	43,8	57,3	10,7	13 . 33 . 24,6		13 . 32 . 43,73	G.
	(*h*) ✱ N.P.D. 98°. 33′.	1,8	15,5	29,1	42,8	56,8	10,1	13 . 36 . 23,7		13 . 35 . 42,83	G.
	✱ N.P.D. 98°. 55′.	36,1	49,8	3,3	17,0	30,9	44,2	13 . 38 . 58,0		13 . 38 . 17,04	G.
	ε Bootis..........	43,1	58,4	13,8	28,7	44,3	59,2	14 . 38 . 14,7		14 . 37 . 28,89	G.
	α Andromedæ....	49,9	5,0	20,3	35,7	51,1	6,0	0 . 0 . 21,6		23 . 59 . 35,66	G.
	Polaris M.........	59.42,2	0.24,6	1. 7,6	1.52,2	2.35,0	3.17,2	1 . 4 . 0,0	+ 1,42	1 . 1 . 52,68	G.
	α Arietis.........	54,8	9,2	24,0	38,4	53,2	7,5	1 . 58 . 22,2		1 . 57 . 38,47	G.
May 2	☉ 1 L............	23,0	37,1	51,2	5,3	19,4	33,2	2 . 34 . 47,3		2 . 34 . 5,21	G.
	☉ 2 L............	35,2	49,3	3,5	17,2	31,4	45,3	2 . 36 . 59,3		2 . 36 . 17,32	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.
From April 25............ EAST. .... *ABCDEFG*.

(*a*) Bad definition. (*b*) Cloudy.
(*c*) Often cloudy: unsatisfactory.
(*d*) Not seen double.
(*e*) Satisfactory.
(*f*) Exceedingly faint and difficult, so shortly after the Sun.
(*g*) Indefinite.
(*h*) Very faint.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,50	− 6,01	+ 3,40	16,07			0,74	34,89	11 . 18 . 51,31	− 2,85	83 Leonis. *np.*
			54,52					11 . 31 . 29,76	− 3,01	Σ 1565. *sf.*
			30,67	5,89	35,22			11 . 41 . 5,92	− 2,98	β Leonis.
			28,56					11 . 43 . 3,81	− 2,91	B.A.C. 4006.
			23,64	59,07	35,43			13 . 16 . 58,94	− 3,20	Spica.
			34,10	9,39	35,29	0,75	34,85	19 . 43 . 9,57	− 1,95	α Aquilæ.
			2,59	38,04	35,45			19 . 47 . 38,06	− 1,95	β Aquilæ.
			43,27					19 . 57 . 18,74		☽ 2 L.
	− 6,76		20,49				35,60	10 . 58 . 56,43	− 2,76	p^3 Leonis.
			14,63					11 . 9 . 50,58	− 3,10	ξ Ursæ Major. *np.*
			53,66					11 . 31 . 29,62	− 3,01	Σ 1565. *sf.*
			29,75	5,89	36,14			11 . 41 . 5,71	− 2,98	β Leonis.
			27,68					11 . 43 . 3,65	− 2,91	B.A.C. 4006.
			23,93	0,56	36,63	0,81	36,47			Rigel.
			46,95	23,62	36,67					β Tauri.
			} 58,29			0,59	37,90	2 . 5 . 36,24		☉'s center.
			24,86	2,90	38,04			10 . 0 . 3,01	− 2,56	Regulus.
			18,28					10 . 58 . 56,45	− 2,73	p^3 Leonis.
			12,52					11 . 9 . 50,69	− 3,07	ξ Ursæ Major. *np.*
			52,80					11 . 32 . 30,98	− 3,01	Σ 1566.
			27,70	5,87	38,17			11 . 41 . 5,89	− 2,96	β Leonis.
			25,55					11 . 43 . 3,74	− 2,88	B.A.C. 4006.
			20,83	59,08	38,25			13 . 16 . 59,06	− 3,21	Spica.
			54,98	33,31	38,33			14 . 8 . 33,23	− 3,12	Arcturus.
+ 0,51	− 4,11	− 0,10	17,50			0,55	38,48	10 . 58 . 56,23	− 2,72	p^3 Leonis.
			52,23					11 . 32 . 30,97	− 2,99	Σ 1566.
			27,00	5,86	38,86			11 . 41 . 5,75	− 2,95	β Leonis.
			32,27	10,97	38,70			14 . 38 . 11,08	− 3,13	ε Bootis.
			36,88	15,62	38,74			14 . 42 . 15,70	− 3,40	a^2 Libræ.
	− 3,43		36,09	17,92	41,83	0,60	41,95	0 . 0 . 18,04	− 0,87	α Andromedæ.
			44,44	25,41	40,97			1 . 2 . 26,42	+ 34,88	Polaris M.
			38,95	21,00	42,05			1 . 58 . 20,95	− 0,78	α Arietis.
			} 22,83					2 . 32 . 4,84		☉'s center.
			9,14					3 . 53 . 51,19		☽ 1 L.
			13,92	56,09	42,17			4 . 26 . 55,98	− 0,97	Aldebaran.
			18,50	0,49	41,99			5 . 7 . 0,58	− 0,77	Rigel.
			41,55	23,55	42,00			5 . 16 . 23,63	− 1,25	β Tauri.
			20,50	2,81	42,31			10 . 0 . 2,70	− 2,47	Regulus.
			42,42					12 . 54 . 24,69	− 3,10	ε Virginis.
			45,90	25,66	39,76			13 . 2 . 28,18	+ 34,63	Polaris SP. M.
			40,14					13 . 7 . 22,42	− 3,18	⁎ N.P.D. 97°. 13′.
			39,29					13 . 16 . 21,57	− 3,16	Σ 1742.
			2,43					13 . 22 . 44,71	− 3,22	⁎ N.P.D. 97°. 3′.
			25,51					13 . 26 . 7,80	− 3,23	⁎ N.P.D. 97°. 49′.
			43,63					13 . 33 . 25,92	− 3,24	*m* Virginis.
			42,74					13 . 36 . 25,03	− 3,26	⁎ N.P.D. 98°. 33′.
			16,95					13 . 38 . 59,24	− 3,27	⁎ N.P.D. 98°. 55′.
			28,69	11,02	42,33			14 . 38 . 11,01	− 3,18	ε Bootis.
			35,46	17,94	42,48	0,61	42,55	0 . 0 . 18,01	− 0,89	α Andromedæ.
			47,39	25,92	38,53			1 . 2 . 29,97	+ 34,37	Polaris M.
			38,29	21,01	42,72			1 . 58 . 20,89	− 0,79	α Arietis.
			} 11,12					2 . 35 . 53,74		☉'s center.

April 24. 22^h, the Transit was levelled.
April 24. 23^h, the Transit was reversed and the Error of Collimation determined.
April 25. $4\frac{1}{2}^h$, and April 30. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
May 2	Aldebaran........	31,4	45,4	59,3	13,7	27,8	41,8	4 . 26 . 55,8		4 . 26 . 13,60	G.
	☽ 1 L............	11,1	26,0	41,3	56,3	11,7	26,6	4 . 49 . 41,8		4 . 48 . 56,40	G.
	Rigel............	37,0	50,6	4,1	17,9	31,8	45,1	5 . 6 . 59,0		5 . 6 . 17,93	G.
	Procyon	43,1	56,6	10,2	23,8	37,3	50,8	7 . 31 . 4,4		7 . 30 . 23,74	G.
	Pollux...........	15,6	30,8	46,1	1,5	17,0	32,0	7 . 35 . 47,5		7 . 35 . 1,50	G.
May 3	(a) ⊙ 1 L...........	12,0	25,8	39,6	54,1	8,1	21,9	2 . 38 . 36,3		2 . 37 . 53,97	G.
	⊙ 2 L...........	24,2	38,3	52,2	6,5	20,7	34,5	2 . 40 . 48,7		2 . 40 . 6,44	G.
	☽ 1 L............	17,5	32,8	47,8	2,9	18,1	33,0	5 . 46 . 48,2		5 . 46 . 2,90	G.
	μ Geminorum.....	2,2	17,0	31,5	46,1	1,0	15,2	6 . 13 . 30,0		6 . 12 . 46,15	G.
	β Leonis.........	......	54,4	8,2	22,2	36,4	50,4	11 . 41 . 4,4	− 6,98	11 . 40 . 22,35	G.
	Piazzi XII. 202...	45,7	0,0	14,2	28,4	43,1	57,1	12 . 44 . 11,7		12 . 43 . 28,60	G.
	ε Virginis........	0,0	14,0	27,8	41,2	55,3	9,0	12 . 54 . 22,8		12 . 53 . 41,44	G.
	α Comæ Berenices.	58,1	12,3	26,6	40,8	55,0	9,3	13 . 2 . 23,5		13 . 1 . 40,80	G.
	(b) Spica............	34,5	48,2	2,0	15,6	29,4	43,0	13 . 16 . 56,7		13 . 16 . 15,63	G.
	Arcturus.........	7,0	21,3	35,5	49,9	4,5	18,6	14 . 8 . 33,0		14 . 7 . 49,98	G.
	Σ 1850. *nf*........	12,1	27,7	43,0	58,3	14,0	29,1	14 . 21 . 44,5		14 . 20 . 58,39	G.
	Σ 1858. *sp*........	39,0	56,0	12,5	29,0	46,0	2,4	14 . 27 . 19,5		14 . 26 . 29,20	G.
	ε Bootis..........	42,1	57,3	12,4	27,8	43,1	58,1	14 . 38 . 13,6		14 . 37 . 27,77	G.
	(b) α^2 Libræ........	50,5	4,0	18,1	32,0	46,4	0,2	14 . 42 . 14,0		14 . 41 . 32,17	G.
	(c) Polaris M........	59.39,2	0.24,0	1. 7,6	1.49,8	2.33,0	3.17,0	1 . 3 . 59,6	+ 1,42	1 . 1 . 51,45	G.
May 4	(d) ⊙ 1 L...........	1,4	15,6	29,6	43,6	57,9	11,8	2 . 42 . 25,9		2 . 41 . 43,68	G.
	⊙ 2 L...........	13,8	27,9	41,9	56,0	10,1	24,0	2 . 44 . 38,1		2 . 43 . 55,97	G.
	β Tauri..........	53,9	9,2	24,5	39,9	55,4	10,5	5 . 16 . 26,0		5 . 15 . 39,92	G.
	α Orionis.........	17,1	30,6	44,0	57,7	11,5	24,9	5 . 46 . 38,4		5 . 45 . 57,75	G.
	ξ Ursæ Majoris. *np*.	19,0	34,8	50,8	6,6	22,7	38,5	11 . 9 . 54,7		11 . 9 . 6,73	G.
	β Leonis.........	39,8	53,8	7,7	21,5	35,8	49,7	11 . 41 . 3,7		11 . 40 . 21,71	G.
	Σ 1633. *sp*.	19,6	35,0	50,0	5,3	20,9	35,9	12 . 12 . 51,1		12 . 12 . 5,40	G.
	(e) Polaris SP. M. ...	59.32,4	0.14,8	0.57,2	1.40,6	2.23,8	3. 5,8	13 . 3 . 49,0	− 1,42	13 . 1 . 39,09	G.
	(f) α^2 Libræ.........	49,7	3,8	17,6	31,5	45,8	59,2	14 . 41	+ 6,98	14 . 41 . 31,58	G.
May 5	Procyon..........	41,3	54,7	8,4	21,7	35,6	48,9	7 . 31 . 2,5		7 . 30 . 21,87	G.
	Pollux...........	13,7	29,0	44,1	59,4	15,0	30,1	7 . 35 . 45,6		7 . 34 . 59,56	G.
	☽ 1 L............	23,8	38,3	53,0	7,7	22,4	37,0	7 . 40 . 51,7		7 . 40 . 7,70	G.
May 10	υ Leonis.........	28,9	42,4	55,8	9,2	23,0	36,2	11 . 28 . 49,8		11 . 28 . 9,33	G.
	β Leonis.........	35,7	49,9	3,7	17,6	31,8	45,5	11 . 40 . 59,8		11 . 40 . 17,72	G.
	β Virginis........	......	......	32,3	45,8	59,4	12,6	11 . 42 . 26,4	− 13,47	11 . 41 . 45,83	G.
	☽ 1 L............	43,0	57,0	11,1	25,1	39,1	53,0	12 . 15 . 7,1		12 . 14 . 25,06	G.
	ψ Virginis	45,9	59,4	13,1	26,6	40,5	54,0	12 . 46 . 7,6		12 . 45 . 26,73	G.
	(g) Polaris SP. M. ...	59.26,3	0. 6,9	0.48,5	1.33,6	2.15,1	2.59,5	13 . 3 . 40,9	− 1,42	13 . 1 . 31,55	G.
	Spica............	29,9	43,5	57,2	10,9	24,7	38,1	13 . 16 . 52,0		13 . 16 . 10,90	G.
	Arcturus.........	2,2	16,7	31,1	45,3	59,9	14,0	14 . 8 . 28,4		14 . 7 . 45,37	G.
	Σ 1847. *nf*........	50,1	3,8	17,2	31,1	45,0	58,3	14 . 20 . 12,1		14 . 19 . 31,08	G.
	Σ 1858. *sp*.	34,3	51,0	8,0	24,3	41,4	58,0	14 . 27 . 14,7		14 . 26 . 24,53	G.
	ε Bootis..........	37,3	52,7	8,0	23,0	38,4	53,8	14 . 38 . 9,0		14 . 37 . 23,17	G.
	α^2 Libræ.........	45,8	59,8	13,6	27,5	41,8	55,5	14 . 42 . 9,7		14 . 41 . 27,67	G.
	(h) Polaris M.........	59.44,8	0.28,0	1.12,4	1.55,4	2.37,6	3.20,8	1 . 4 . 3,0	+ 1,42	1 . 1 . 55,99	G.
May 11	(i) ⊙ 1 L...........	1,8	16,0	30,1	44,2	58,6	12,6	3 . 9 . 27,0		3 . 8 . 44,33	G.
	⊙ 2 L...........	15,2	29,2	43,6	57,8	12,1	26,1	3 . 11 . 40,4		3 . 10 . 57,77	G.
	(k) Arcturus.........	1,7	15,9	30,1	44,5	58,8	13,2	14 . 8 . 27,2		14 . 7 . 44,49	G.
	(l) Polaris M.........	59.43,2	0.26,8	1. 8,0	1.50,2	2.34,2	3.15,2	1 . 3 . 57,8	+ 1,42	1 . 1 . 52,19	G.
May 13	β Leonis.........	33,1	47,2	1,1	15,2	29,3	43,1	11 . 40 . 57,1		11 . 40 . 15,16	G.
	(m) Σ 1634. *np*........	15,6	30,1	45,0	59,8	14,6	29,1	12 . 12 . 44,0		12 . 11 . 59,75	G.
	Spica............	27,2	41,0	54,7	8,3	22,2	35,9	13 . 16 . 49,6		13 . 16 . 8,42	G.
	✻ N.P.D. 97°. 3′..	13,4	27,0	40,7	54,1	8,0	21,2	13 . 22 . 35,0		13 . 21 . 54,20	G.
	(n) ✻N.P.D. 97°.49′. *np*.	36,5	50,1	3,7	17,1	30,9	44,2	13 . 25 . 58,0		13 . 25 . 17,22	G.
	m Virginis.......	54,7	8,1	21,8	35,3	49,1	2,5	13 . 33 . 16,3		13 . 32 . 35,40	G.
	(m) ✻ N.P.D. 98°. 33′.	53,2	7,4	21,0	34,6	48,2	2,0	13 . 36 . 15,7		13 . 35 . 34,59	G.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(*a*) Great waving. (*b*) Cloudy. (*c*) Faint and unsteady. (*d*) Clouded throughout, but well defined. (*e*) Good. (*f*) Clouded at last two wires. (*g*) Coincidence reading used in the observation was 10,087, coincidence found afterwards, 10,117. Hence $1^s,27$ has been added to all but the middle wire. (*h*) Faint and extremely unsteady. (*i*) Badly defined. (*k*) Grouped with the preceding clock-stars. (*l*) Much clouded. (*m*) Faint. (*n*) Components very close.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,51	− 3,43	− 0,10	13,45	56,09	42,64	0,61	42,55	4 . 26 . 56,11	− 0,97	Aldebaran.
			56,22					4 . 49 . 38,89		☽ 1 L.
			17,84	0,49	42,65			5 . 7 . 0,52	− 0,77	Rigel.
			23,61	6,44	42,83			7 . 31 . 6,35	− 1,59	Procyon.
			1,30	43,93	42,63			7 . 35 . 44,04	− 1,92	Pollux.
		+ 0,55	} 0,08			0,61	43,17	2 . 39 . 43,32		⊙'s center.
			2,74					5 . 46 . 46,06		☽ 1 L.
			45,99					6 . 13 . 29,32	− 1,43	μ Geminorum.
			22,22	5,80	43,58			11 . 41 . 5,69	− 2,89	β Leonis.
			28,45					12 . 44 . 11,94	− 3,10	Piazzi XII. 202.
			41,31					12 . 54 . 24,81	− 3,10	ε Virginis.
			40,66					13 . 2 . 24,16	− 3,13	α Comæ Beren.
			15,58	59,10	43,52			13 . 16 . 59,09	− 3,23	Spica.
			49,83	33,35	43,52			14 . 8 . 33,36	− 3,16	Arcturus.
			58,21					14 . 21 . 41,74	− 3,21	Σ 1850. *nf.*
			28,98					14 . 27 . 12,52	− 3,25	Σ 1858. *sp.*
			27,59	11,03	43,44			14 . 38 . 11,13	− 3,19	ε Bootis.
			32,16	15,71	43,55			14 . 42 . 15,70	− 3,49	α^2 Libræ.
			45,20	26,90	41,70	0,60	43,78	1 . 2 . 29,01	+ 33,39	Polaris M.
			} 49,70					2 . 43 . 33,55		⊙'s center.
			39,74	23,54	43,80			5 . 16 . 23,65	− 1,24	β Tauri.
			57,65	41,55	43,90			5 . 46 . 41,57	− 1,13	α Orionis.
			6,53					11 . 9 . 50,59	− 2,94	ξ Ursæ Major. *np.*
			21,58	5,79	44,21			11 . 41 . 5,65	− 2,88	β Leonis.
			5,22					12 . 12 . 49,31	− 3,09	Σ 1633. *sp.*
			45,13	27,14	42,01			13 . 2 . 29,24	+ 33,15	Polaris SP. M.
			31,57	15,71	44,14			14 . 42 . 15,72	− 3,49	α^2 Libræ.
			21,77	6,40	44,63	0,61	44,38			Procyon.
			59,38	43,89	44,51					Pollux.
			7,56					7 . 40 . 52,14		☽ 1 L.
	− 4,12	+ 3,10	9,35			0,78	47,63	11 . 28 . 57,35	− 2,72	υ Leonis.
			17,66	5,74	48,08			11 . 41 . 5,67	− 2,83	β Leonis.
			45,84					11 . 42 . 33,85	− 2,82	β Virginis.
			25,13					12 . 15 . 13,16		☽ 1 L.
			26,80					12 . 46 . 14,84	− 3,09	ψ Virginis.
			42,97	29,70	46,73			13 . 2 . 31,02	+ 30,59	Polaris SP. M.
			10,99	59,10	48,11			13 . 16 . 59,05	− 3,23	Spica.
			45,28	33,37	48,09			14 . 8 . 33,37	− 3,18	Arcturus.
			31,15					14 . 20 . 19,24	− 3,41	Σ 1847. *nf.*
			24,31					14 . 27 . 12,41	− 3,26	Σ 1858. *sp.*
			23,03	11,07	48,04			14 . 38 . 11,13	− 3,23	ε Bootis.
			27,80	15,76	47,96			14 . 42 . 15,91	− 3,54	α^2 Libræ.
			44,58	29,97	45,39		48,41	1 . 2 . 33,02	+ 30,32	Polaris M.
			} 50,97					3 . 10 . 39,48		⊙'s center.
			44,40	33,37	48,97			14 . 8 . 33,27	− 3,18	Arcturus.
			40,78	30,57	49,79	0,82	49,23	1 . 2 . 30,04	+ 29,72	Polaris M.
			15,10	5,71	50,61		50,05	11 . 41 . 5,55	− 2,80	β Leonis.
			59,63					12 . 12 . 50,10	− 2,98	Σ 1634. *np.*
			8,51	59,09	50,58			13 . 16 . 59,01	− 3,22	Spica.
			54,27					13 . 22 . 44,78	− 3,22	⁎ N.P.D. 97°. 3′.
			17,29					13 . 26 . 7,80	− 3,24	⁎ N.P.D. 97°.49′. *np.*
			35,47					13 . 33 . 25,98	− 3,26	*m* Virginis.
			34,66					13 . 36 . 25,17	− 3,28	⁎ N.P.D. 98°. 33′.

May 11. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
May 13	⁎ N.P.D. 98°. 55′.	27,9	41,3	55,0	8,6	22,5	36,0	13 . 38 . 49,7		13 . 38 . 8,72	G.
	ε Bootis	35,1	50,2	5,6	20,6	36,0	51,1	14 . 38 . 6,3		14 . 37 . 20,70	G.
	α^2 Libræ.........	43,0	57,0	11,1	25,0	39,1	53,0	14 . 42 . 7,1		14 . 41 . 25,04	G.
	(a) 20 Libræ.........	22,3	37,1	52,0	6,6	21,8	36,2	14 . 54 . 51,1		14 . 54 . 6,73	G.
	(b) ☽ 1 L	13,1	28,0	43,2	58,3	13,5	28,8	15 . 18 . 43,8		15 . 17 . 58,39	G.
	☽ 2 L.............	41,3	56,3	11,6	26,4	42,0	57,0	15 . 21 . 12,1		15 . 20 . 26,67	G.
	α Coronæ Borealis.	30,0	45,0	0,1	15,1	30,6	45,7	15 . 28 . 0,9		15 . 27 . 15,35	G.
	δ Scorpii.........	33,0	47,8	2,1	16,8	31,5	45,9	15 . 51 . 0,5		15 . 50 . 16,80	G.
	σ Scorpii.........	8,0	22,8	37,7	52,4	7,8	22,2	16 . 11 . 37,1		16 . 10 . 52,57	G.
	(a) Antares..........	15,9	30,7	45,8	0,6	16,0	30,8	16 . 19 . 45,7		16 . 19 . 0,78	G.
May 16	(c) ☉ 1 L...........	......	......	......	18,0	32,5	46,7	3 . 29 . 0,9	−21,43	3 . 28 . 18,09	G.
	☉ 2 L.	49,4	4,0	18,0	32,3	47,0	1,1	3 . 31 . 15,2		3 . 30 . 32,43	G.
May 20	(d) ☉ 1 L...........	25,0	39,4	53,8	8,1	22,8	36,9	3 . 44 . 51,2		3 . 44 . 8,17	G.
	☉ 2 L.	40,0	54,3	8,8	23,1	37,7	51,8	3 . 47 . 6,4		3 . 46 . 23,16	G.
	Rigel............	24,2	38,0	51,4	5,0	18,9	32,4	5 . 6 . 46,1		5 . 6 . 5,14	G.
	β Tauri	42,5	57,8	13,1	28,3	43,9	59,1	5 . 16 . 14,5		5 . 15 . 28,46	G.
	α Orionis.........	5,3	19,0	32,4	46,1	59,9	13,2	5 . 46 . 26,9		5 . 45 . 46,11	G.
May 21	α Arietis.........	41,0	55,6	10,0	24,7	39,5	53,7	1 . 58 . 8,5		1 . 57 . 24,71	G.
May 22	(e) ☉ 2 L............	38,2	53,0	7,2	21,7	36,1	50,4	3 . 55 . 5,0		3 . 54 . 21,65	G.
	Arcturus.........	53,5	7,9	22,1	36,4	51,0	5,0	14 . 8 . 19,5		14 . 7 . 36,49	G.
	(f) ε Bootis..........	......	43,9	58,9	14,1	29,7	44,6	14 . 38 . 0,0	−7,61	14 . 37 . 14,26	G.
May 25	Arcturus.........	51,1	5,5	19,8	34,1	48,7	2,8	14 . 8 . 17,2		14 . 7 . 34,17	G.
	ε Bootis..........	26,2	41,4	56,8	12,0	27,3	42,3	14 . 37 . 57,7		14 . 37 . 11,95	G.
	α^2 Libræ.........	34,5	48,4	2,5	16,4	30,4	44,5	14 . 41 . 58,7		14 . 41 . 16,49	G.
May 26	☉ 1 L............	26,2	40,8	55,1	9,6	24,3	38,7	4 . 8 . 53,0		4 . 8 . 9,68	G.
	☉ 2 L.	42,0	56,5	11,0	25,6	40,1	54,5	4 . 11 . 9,0		4 . 10 . 25,53	G.
	Aldebaran........	14,5	28,5	42,4	56,5	10,7	24,7	4 . 26 . 38,7		4 . 25 . 56,57	G.
May 29	Arcturus.........	48,5	2,8	17,1	31,4	46,0	0,0	14 . 8 . 14,3		14 . 7 . 31,44	G.
	(g) Σ 1858............	20,6	37,2	54,0	10,6	27,6	44,0	14 . 27 . 1,0		14 . 26 . 10,71	G.
	ε Bootis..........	......	......	54,0	9,2	24,6	39,5	14 . 37 . 55,0	−15,22	14 . 37 . 9,24	G.
	α^2 Libræ.........	31,9	46,0	59,8	13,9	27,8	41,7	14 . 41 . 55,8		14 . 41 . 13,84	G.
	β Bootis.........	10,0	27,8	45,8	3,5	21,7	39,0	14 . 55 . 57,1		14 . 55 . 3,56	G.
	α Coronæ Borealis.	18,7	33,8	49,0	4,0	19,2	34,5	15 . 27 . 49,6		15 . 27 . 4,11	G.
	Σ 1963. *sf.*.......	45,4	1,0	16,6	32,1	48,1	3,3	15 . 31 . 19,2		15 . 30 . 32,24	G.
	α Serpentis.......	53,0	6,8	20,1	33,8	47,3	0,9	15 . 36 . 14,7		15 . 35 . 33,80	G.
	β Serpentis.......	16,0	30,0	44,0	58,0	12,3	26,1	15 . 38 . 40,2		15 . 37 . 58,09	G.
June 1	*m* Virginis........	41,3	54,9	8,5	22,0	36,0	49,3	13 . 33 . 3,0		13 . 32 . 22,14	G.
	⁎ N.P.D. 98°. 55′.	14,7	28,2	41,8	55,2	9,1	22,9	13 . 38 . 36,7		13 . 37 . 55,51	G.
	Σ 1823.	26,9	40,6	54,1	7,7	21,7	35,2	14 . 7 . 49,0		14 . 7 . 7,89	G.
	ε Bootis..........	22,0	37,0	52,2	7,4	23,0	38,0	14 . 37 . 53,2		14 . 37 . 7,55	G.
	α^2 Libræ.........	30,1	44,1	58,0	11,9	26,0	39,9	14 . 41 . 54,0		14 . 41 . 12,00	G.
	(f) Σ 1952. *nf.*.........	40,2	54,1	8,0	......	......	......	15 . 23	+27,37	15 . 23 . 21,47	G.
	α Coronæ Borealis.	......	32,0	47,0	2,1	17,5	32,4	15 . 27 . 47,8	−7,58	15 . 27 . 2,22	G.
	α Serpentis.......	51,3	5,0	18,5	31,9	45,9	59,2	15 . 36 . 12,8		15 . 35 . 32,08	G.
June 3	(h) ☉ 1 L...........	56,2	10,9	25,5	40,1	55,0	9,4	4 . 41 . 24,0		4 . 40 . 40,15	G.
	☉ 2 L...........	13,2	27,9	42,5	......	......	......	4 . 42	+29,19	4 . 42 . 57,06	G.
	α Comæ Berenices.	36,1	50,6	4,7	18,9	33,2	......	13 . 1	+14,17	13 . 1 . 18,87	G.
	(i) Σ 1742...........	36,0	49,3	3,0	16,5	30,1	43,5	13 . 15 . 57,0		13 . 15 . 16,49	G.
	Σ 1804. *sp.*.......	10,5	25,0	39,5	53,9	8,8	23,0	14 . 0 . 37,7		13 . 59 . 54,06	G.
	Arcturus.........	45,3	59,8	14,0	28,1	42,8	57,0	14 . 8 . 11,2		14 . 7 . 28,32	G.
	(k) Σ 1847. *nf.*.......	33,0	46,8	0,3	14,0	27,8	41,2	14 . 19 . 55,0		14 . 19 . 14,01	G.
	(l) Σ 1879............	53,5	7,1	21,0	34,6	48,3	2,0	14 . 38 . 15,8		14 . 37 . 34,61	G.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(*a*) Indefinite. (*b*) Great waving, and limbs much fringed. No correction required for defect of illumination of 2 L. (*c*) Observation not satisfactory, and too distant from clock-stars. (*d*) Good. (*e*) First limb quite clouded. (*f*) Cloudy. (*g*) Seen to be double, but observed as single, the stars being very close. (*h*) First limb very good, the other clouded. (*i*) Observed as single. (*k*) Extremely faint. (*l*) Not seen double.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,51	– 4,12	+ 3,10	8,79			0,82	50,05	13 . 38 . 59,30	– 3,29	⁎ N.P.D. 98°.55′.
			20,56	11,07	50,51			14 . 38 . 11,11	– 3,23	ε Bootis.
			25,17	15,78	50,61			14 . 42 . 15,72	– 3,56	α² Libræ.
			6,92					14 . 54 . 57,48	– 3,78	20 Libræ.
			58,58					15 . 18 . 49,15		☽ 1 L.
			26,86					15 . 21 . 17,43		☽ 2 L.
			15,21	5,75	50,54			15 . 28 . 5,79	– 3,21	α Coronæ Borealis.
			16,98					15 . 51 . 7,57	– 3,81	δ Scorpii.
			52,76					16 . 11 . 43,36	– 3,90	σ Scorpii.
			0,99	51,41	50,42			16 . 19 . 51,60	– 3,92	Antares.
	– 3,73		} 25,20			0,71	52,18	3 . 30 . 17,48		☉'s center.
			} 15,61			0,73	55,09	3 . 46 . 10,81		☉'s center.
			5,23	0,44	55,21			5 . 7 . 0,47	– 0,72	Rigel.
			28,34	23,52	55,18			5 . 16 . 23,59	– 1,22	β Tauri.
			46,11	41,48	55,37			5 . 46 . 41,37	– 1,06	α Orionis.
			24,63	21,36	56,73	0,74	56,55	1 . 58 . 21,24	– 1,14	α Arietis.
			21,59					3 . 55 . 18,26		☉ 2 L.
			36,43	33,37	56,94			14 . 8 . 33,41	– 3,18	Arcturus.
			14,14	11,08	56,94			14 . 38 . 11,14	– 3,24	ε Bootis.
		+ 2,01	34,07	33,36	59,29	0,75	58,84	14 . 8 . 33,35	– 3,17	Arcturus.
			11,79	11,08	59,29			14 . 38 . 11,09	– 3,24	ε Bootis.
			16,56	15,84	59,28			14 . 42 . 15,86	– 3,62	α² Libræ.
			} 17,49			0,74	59,58	4 . 10 . 17,20		☉'s center.
			56,48	56,20	59,72					Aldebaran.
	– 4,98		31,26	33,35	62,09	0,64	61,65	14 . 8 . 33,29	– 3,16	Arcturus.
			10,41					14 . 27 . 12,44	– 3,23	Σ 1858.
			9,00	11,07	62,07			14 . 38 . 11,04	– 3,23	ε Bootis.
			13,88	15,85	61,97			14 . 42 . 15,92	– 3,63	α² Libræ.
			3,21					14 . 56 . 5,26	– 3,27	β Bootis.
			3,87	5,83	61,96			15 . 28 . 5,93	– 3,29	α Coronæ Borealis.
			31,98					15 . 31 . 34,04	– 3,28	Σ 1963. *sf.*
			33,70	35,86	62,16			15 . 36 . 35,77	– 3,45	α Serpentis.
			57,93					15 . 39 . 0,00	– 3,37	β Serpentis.
			22,12			0,65	63,42	13 . 33 . 25,91	+ 3,22	*m* Virginis.
			55,50					13 . 38 . 59,29	– 3,26	⁎ N.P.D. 98°.55′.
			7,76					14 . 8 . 11,56	– 3,22	Σ 1823.
			7,31	11,07	63,76			14 . 38 . 11,13	– 3,23	ε Bootis.
			12,04	15,86	63,82			14 . 42 . 15,86	– 3,64	α² Libræ.
			21,34					15 . 24 . 25,18	– 3,41	Σ 1952. *nf.*
			1,98	5,84	63,86			15 . 28 . 5,82	– 3,30	α Coronæ Borealis.
			31,98	35,87	63,89			15 . 36 . 35,82	– 3,46	α Serpentis.
			} 48,41			0,73	64,74	4 . 42 . 53,29		☉'s center.
			18,70					13 . 2 . 23,84	– 2,95	α Comæ Berenices.
			16,41					13 . 16 . 21,55	– 3,06	Σ 1742.
			53,86					14 . 0 . 59,03	– 3,15	Σ 1804. *sp.*
			28,14	33,32	65,18			14 . 8 . 33,31	– 3,13	Arcturus.
			14,00					14 . 20 . 19,18	– 3,45	Σ 1847. *nf.*
			34,48					14 . 38 . 39,66	– 3,31	Σ 1879.

May 21. 22^h, and June 4. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
June 3	α^2 Libræ........	28,9	42,8	56,7	10,5	24,8	38,5	14 . 41 . 52,7		14 . 41 . 10,70	G.
	Σ 1921. *np*........	5,6	22,8	40,1	57,7	15,2	32,3	15 . 5 . 50,1		15 . 4 . 57,69	G.
	Σ 1934. *sp*........	54,2	13,2	32,0	50,9	10,0	28,8	15 . 11 . 47,5		15 . 10 . 50,94	G.
	(*a*) ✳ N.P.D. 84°. 12′.	16,8	30,2	43,8	57,3	11,0	24,6	15 . 18 . 38,2		15 . 17 . 57,42	G.
	Σ 1943. *np*........	......	......	......	......	3,6	16,9	15 . 19 . 30,3	− 27,10	15 . 18 . 49,83	G.
	Σ 1952. *nf*........	38,9	52,6	6,0	19,9	33,8	47,3	15 . 24 . 1,0		15 . 23 . 19,93	G.
	α Coronæ Borealis.	15,5	30,7	45,8	0,7	16,1	31,1	15 . 27 . 46,4		15 . 27 . 0,90	G.
	α Serpentis.......	50,0	3,6	17,0	30,5	44,2	57,7	15 . 36 . 11,5		15 . 35 . 30,64	G.
	31 Ophiuchi......	......	33,5	48,2	3,2	18,4	33,1	16 . 54 . 48,1	− 7,44	16 . 54 . 3,31	G.
	Mars 1 L.........	49,1	......	18,7	......	48,9	......	16 . 57 . 18,3	− 0,02	16 . 56 . 33,73	G.
	Mars 2 L.........	......	5,7	......	35,2	......	5,2	16 . 57	+ 0,03	16 . 56 . 35,40	G.
	α Herculis........	46,0	59,9	13,8	27,8	41,9	55,6	17 . 7 . 9,6		17 . 6 . 27,80	G.
June 4	(*b*) Polaris M.........	59.43,6	0.26,4	1. 9,6	1.50,4	2.33,2	3.17,8	1 . 3 . 59,4	+ 1,42	1 . 1 . 52,91	G.
	(*c*) α Arietis.........	31,8	46,3	0,9	......	......	44,7	1 . 57 . 59,4	+ 2,94	1 . 57 . 15,56	G.
June 5	☽ 1 L.............	50,8	4,6	18,5	32,2	46,1	59,8	11 . 0 . 13,9		10 . 59 . 32,27	G.
	(*d*) τ Leonis.........	7,0	20,7	34,1	47,6	1,1	14,5	11 . 19 . 28,1		11 . 18 . 47,59	G.
	Polaris SP. M.....	59.22,8	0. 7,2	0.49,4	1.32,6	2.15,4	2.58,0	13 . 3 . 34,2	− 1,42	13 . 1 . 29,95	G.
	Spica............	11,1	24,8	38,3	52,1	6,0	19,7	13 . 16 . 33,3		13 . 15 . 52,18	G.
	Piazzi XIII. 163..	34,7	50,1	5,5	20,8	36,4	51,7	13 . 33 . 7,2		13 . 32 . 20,91	G.
	(*e*) Arcturus.........	43,8	58,1	12,3	26,8	41,3	55,6	14 . 8 . 9,8		14 . 7 . 26,82	G.
	Σ 1879.	52,0	5,8	19,4	33,0	46,9	0,4	14 . 38 . 14,2		14 . 37 . 33,10	G.
	α^2 Libræ.........	27,2	41,1	55,0	9,0	23,1	37,1	14 . 41 . 51,1		14 . 41 . 9,09	G.
	(*f*) Σ 1886. *nf*.......	......	......	......	23,7	37,3	51,0	14 . 43 . 4,7	− 20,54	14 . 42 . 23,63	G.
	α Coronæ Borealis.	14,0	29,1	44,2	59,4	14,7	29,7	15 . 27 . 45,0		15 . 26 . 59,45	G.
	χ Libræ.........	14,0	28,7	43,3	58,0	12,9	27,1	15 . 30 . 41,9		15 . 29 . 57,99	G.
	α Herculis........	44,5	58,5	12,3	26,2	40,4	54,0	17 . 7 . 8,0		17 . 6 . 26,27	G.
June 6	☽ 1 L...........	28,5	42,3	56,2	10,2	24,4	37,8	11 . 53 . 51,9		11 . 53 . 10,18	C.
	(*g*) η Virginis........	......	......	34,7	48,1	1,7	15,0	12 . 11	− 6,73	12 . 10 . 48,14	C.
	Arcturus.........	43,2	57,5	11,8	26,1	40,6	54,6	14 . 8 . 9,0		14 . 7 . 26,12	C.
	ϵ Bootis..........	18,4	33,5	48,9	4,1	19,5	34,5	14 . 37 . 49,9		14 . 37 . 4,11	C.
	α^2 Libræ.........	26,5	40,5	54,6	8,6	22,4	36,5	14 . 41 . 50,4		14 . 41 . 8,50	C.
June 8	(*h*) ☉ 1 L............	27,3	41,7	56,6	11,2	26,0	40,7	5 . 1 . 55,3		5 . 1 . 11,25	C.
	(*g*) ☉ 2 L............	44,6	59,0	......	28,5	43,3	58,1	5 . 4 . 12,6	− 2,45	5 . 3 . 28,57	C.
June 9	☉ 1 L.	34,4	48,9	3,5	18,2	33,1	47,5	5 . 6 . 2,4		5 . 5 . 18,29	C.
	(*g*) ☉ 2 L.	51,7	6,4	......	......	50,5	......	5 . 8 . 19,7	+ 3,62	5 . 7 . 35,69	C.
	(*g*) Arcturus.........	41,2	55,7	9,4	......	......	......	14 . 7	+ 28,69	14 . 7 . 24,12	C.
	(*g*) ϵ Bootis..........	......	......	......	2,1	......	32,4	14 . 37 . 48,0	− 25,34	14 . 37 . 2,16	C.
June 10	Polaris SP. M....	59.23,4	0 .8,3	0.50,6	1.34,7	2.17,0	2.59,5	13 . 3 . 41,9	− 1,42	13 . 1 . 32,21	C.
	(*g*) Spica............	8,0	21,5	35,2	49,0	......	16,3	13 . 16 . 30,2	+ 2,30	13 . 15 . 49,00	C.
	ϵ Bootis..........	15,5	31,0	46,2	1,4	16,7	31,7	14 . 37 . 47,1		14 . 37 . 1,37	C.
	Σ 1886. *nf*.......	39,4	53,0	6,6	20,5	34,3	47,6	14 . 43 . 1,4		14 . 42 . 20,40	C.
	ι^1 Libræ..........	28,0	42,2	56,6	10,6	25,3	39,2	15 . 3 . 53,6		15 . 3 . 10,78	C.
	α Coronæ Borealis.	10,6	25,8	40,7	56,0	11,4	26,2	15 . 27 . 41,5		15 . 26 . 56,03	C.
	κ Libræ..........	5,7	20,0	34,2	48,6	3,0	17,1	15 . 32 . 31,4		15 . 31 . 48,58	C.
	α Serpentis	45,1	58,7	12,5	26,0	39,6	53,1	15 . 36 . 6,6		15 . 35 . 25,94	C.
	☽ 1 L............	5,2	20,2	35,5	50,7	6,3	21,3	15 . 52 . 36,6		15 . 51 . 50,83	C.
	Antares..........	56,7	11,6	26,5	41,6	56,8	11,7	16 . 19 . 26,8		16 . 18 . 41,67	C.
June 14	Aldebaran........	0,9	15,0	28,9	42,8	57,1	11,0	4 . 27 . 25,1		4 . 26 . 42,97	C.
	Rigel............	6,2	19,8	33,4	46,9	0,8	14,3	5 . 7 . 28,0		5 . 6 . 47,06	C.
	(*i*) β Tauri..........	24,4	39,6	54,6	10,1	25,6	40,7	5 . 16 . 56,2		5 . 16 . 10,17	C.
June 15	☉ 1 L.	20,8	35,5	50,4	4,8	19,9	34,3	5 . 31 . 49,2		5 . 31 . 4,99	C.
	☉ 2 L.	38,5	53,1	8,0	22,5	37,6	52,1	5 . 34 . 7,0		5 . 33 . 22,68	C.
	Castor..........	35,0	50,8	6,6	22,7	38,7	54,4	7 . 25 . 10,4		7 . 24 . 22,66	C.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(*a*) Judged to be of 7th magnitude.
(*b*) Faint from clouds.
(*c*) Clouds passing.
(*d*) Very faint.
(*e*) Blazing. (*f*) A faint companion seen.
(*g*) Cloudy.
(*h*) Very loud wind.
(*i*) Very difficult, so near the Sun.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	"	"	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,51	− 4,98	+ 2,01	10,74	15,86	65,12	0,73	64,74	14 . 42 . 15,93	− 3,64	α^2 Libræ.
			57,36					15 . 6 . 2,56	− 3,25	Σ 1921. *np.*
			50,56					15 . 11 . 55,76	− 3,27	Σ 1934. *sp.*
			57,32					15 . 19 . 2,52	− 3,45	✱ N.P.D. 84°. 12′.
			49,73					15 . 19 . 54,93	− 3,45	Σ 1943. *np.*
			19,80					15 . 24 . 25,01	− 3,42	Σ 1952. *nf.*
			0,66	5,84	65,18			15 . 28 . 5,87	− 3,30	α Coronæ Borealis.
			30,54	35,88	65,34			15 . 36 . 35,75	− 3,47	α Serpentis.
			3,42					16 . 55 . 8,67	− 4,24	31 Ophiuchi.
			} 34,68					16 . 57 . 39,93		Mars center.
			27,65	32,88	65,23			17 . 7 . 32,91	− 3,43	α Herculis.
			41,37	46,60	65,23	0,68	66,31	1 . 2 . 47,71	+ 13,69	Polaris.
			15,36	21,72	66,36			1 . 58 . 21,73	− 1,50	α Arietis.
			32,21					11 . 0 . 38,83		☽ 1 L.
			47,50					11 . 19 . 54,13	− 2,43	τ Leonis.
			41,30	46,93	65,63			13 . 2 . 47,98	+ 13,36	Polaris SP.
			52,17	59,00	66,83			13 . 16 . 58,86	− 3,13	Spica.
			20,66					13 . 33 . 27,35	− 3,04	Piazzi XIII. 163.
			26,64	33,31	66,67			14 . 8 . 33,35	− 3,12	Arcturus.
			32,97					14 . 38 . 39,69	− 3,31	Σ 1879.
			9,13	15,86	66,73			14 . 42 . 15,86	− 3,64	α^2 Libræ.
			23,50					14 . 43 . 30,23	− 3,32	Σ 1886. *nf.*
			59,21	5,83	66,62			15 . 28 . 5,96	− 3,29	α Coronæ Borealis.
			58,08					15 . 31 . 4,83	− 4,01	χ Libræ.
			26,12	32,91	66,79			17 . 7 . 32,91	− 3,46	α Herculis.
			10,16			0,60	66,93	11 . 54 . 17,39		☽ 1 L.
			48,08					12 . 11 . 55,31	− 2,70	η Virginis.
			25,94	33,31	67,37			14 . 8 . 33,22	− 3,12	Arcturus.
			3,87	11,05	67,18			14 . 38 . 11,17	− 3,21	ε Bootis.
			8,54	15,86	67,32			14 . 42 . 15,84	− 3,64	α^2 Libræ.
		+ 0,03	} 19,64			0,67	68,27	5 . 3 . 28,05		⊙'s center.
			} 26,72			0,76	68,84	5 . 7 . 35,72		⊙'s center.
			23,86	33,29	69,43					Arcturus.
			1,86	11,03	69,17					ε Bootis.
	− 5,24		40,93	51,04	70,11	0,79	69,61			Polaris SP.
			48,86	58,97	70,11			13 . 16 . 58,91	− 3,10	Spica.
			1,05	11,03	69,98			14 . 38 . 11,14	− 3,19	ε Bootis.
			20,17					14 . 43 . 30,26	− 3,31	Σ 1886. *nf.*
			10,70					15 . 4 . 20,81	− 3,81	ι^1 Libræ.
			55,71	5,83	70,12			15 . 28 . 5,83	− 3,29	α Coronæ Borealis.
			48,50					15 . 32 . 58,62	− 3,94	κ Libræ.
			25,72	35,91	70,19			15 . 36 . 35,85	− 3,50	α Serpentis.
			50,78					15 . 53 . 0,91		☽ 1 L.
			41,63	51,77	70,14			16 . 19 . 51,78	− 4,28	Antares.
		− 0,83	42,69	56,48	13,79	0,77	13,61	4 . 26 . 56,44	− 1,36	Aldebaran.
			46,87	0,63	13,76			5 . 7 . 0,64	− 0,91	Rigel.
			9,82	23,75	13,93			5 . 16 . 23,60	− 1,45	β Tauri.
			} 13,52					5 . 32 . 27,31		⊙'s center.
			22,29	36,06	13,77			7 . 24 . 36,14	− 1,61	Castor.

June 14. 22^h, the Transit was levelled.
June 12. $2\frac{1}{2}^h$, the clock was put forward 1^m.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
June 15	(a) Procyon..........	11,8	25,4	38,8	52,3	6,2	19,4	7 . 31 . 33,1		7 . 30 . 52,43	C.
	Pollux............	44,2	59,6	15,0	30,2	45,7	0,5	7 . 36 . 16,2		7 . 35 . 30,20	C.
	(b) Mars 1 L.........	13,4	......	42,8	......	12,9	......	16 . 40 . 42,5	− 0,02	16 . 39 . 57,88	C.
	(b) Mars 2 L.........	......	29,7	......	59,5	......	29,3	16 . 40	+ 0,03	16 . 39 . 59,53	C.
	(c) ⚹ N.P.D. 115°. 20′.	44,4	59,2	14,1	28,8	43,7	58,5	16 . 43 . 13,5		16 . 42 . 28,89	C.
	α Herculis........	37,4	51,5	5,3	19,1	33,2	47,1	17 . 8 . 1,0		17 . 7 . 19,23	C.
	α Ophiuchi.......	47,4	1,2	15,1	28,6	42,5	56,2	17 . 28 . 10,1		17 . 27 . 28,73	C.
	(d) Σ 2213. *sf*.......	57,6	13,3	29,1	44,9	1,1	16,3	17 . 39 . 32,2		17 . 38 . 44,93	C.
	Rigel............	5,5	19,1	32,6	46,2	59,8	13,6	5 . 7 . 27,2		5 . 6 . 46,29	C.
June 16	☉ 1 L............	29,3	43,8	58,5	13,3	28,2	42,5	5 . 35 . 57,4		5 . 35 . 13,28	C.
	☉ 2 L............	47,0	1,5	16,2	30,9	46,0	0,3	5 . 38 . 15,0		5 . 37 . 30,98	C.
	α Orionis........	46,6	0,2	13,8	27,2	41,1	54,4	5 . 47 . 8,0		5 . 46 . 27,33	C.
	Procyon..........	11,1	24,8	38,3	51,7	5,3	18,8	7 . 31 . 32,4		7 . 30 . 51,77	C.
	Pollux...........	43,5	58,8	14,1	29,5	45,0	0,2	7 . 36 . 15,5		7 . 35 . 29,52	C.
	Polaris SP........	37.15,3	45.46,4	54. 4,5	2.35,8	11. 1,0	19.24,4	13 . 27 . 49,5		13 . 2 . 33,84	C.
	δ Ophiuchi........	16,1	29,5	43,1	56,3	10,1	23,2	16 . 6 . 36,9		16 . 5 . 56,46	C.
	Antares..........	52,0	6,8	22,1	36,8	52,2	6,8	16 . 20 . 21,8		16 . 19 . 36,93	C.
June 17	(e) ☉ 1 L............	37,8	52,4	7,0	21,8	36,7	51,2	5 . 40 . 6,4		5 . 39 . 21,90	C.
	(e) ☉ 2 L............	55,7	10,4	25,1	40,0	54,7	9,4	5 . 42 . 24,0		5 . 41 . 39,90	C.
	Regulus..........	5,5	19,4	33,2	47,1	1,0	14,7	10 . 0 . 28,5		9 . 59 . 47,06	C.
	Polaris SP........	37.14,2	45.44,5	54. 3,0	2.36,6	11. 0,0	19.24,6	13 . 27 . 51,5		13 . 2 . 33,49	C.
	Arcturus.........	35,1	49,3	3,6	17,8	32,5	46,6	14 . 9 . 1,2		14 . 8 . 18,02	C.
	⚹ N.P.D. 84°. 12′.	6,6	20,2	33,7	47,2	1,0	14,2	15 . 19 . 28,0		15 . 18 . 47,27	C.
	α Serpentis.......	39,7	53,2	6,8	20,5	34,2	47,6	15 . 37 . 1,3		15 . 36 . 20,47	C.
	Σ 1985. *sf*........	54,8	8,4	21,8	35,3	49,0	2,3	15 . 48 . 15,9		15 . 47 . 35,36	C.
	(f) Σ 2011..........	20,5	36,0	51,4	6,9	22,5	37,8	16 . 1 . 53,4		16 . 1 . 6,93	C.
	δ Ophiuchi........	15,4	28,7	42,3	55,7	9,4	22,6	16 . 6 . 36,3		16 . 5 . 55,77	C.
June 20	Mars 1 L.........	31,9	......	1,8	......	31,7	......	16 . 34 . 1,2	− 0,02	16 . 33 . 16,63	C.
	Mars 2 L.........	......	48,3	......	18,1	......	47,9	16 . 33	+ 0,03	16 . 33 . 18,13	C.
	(g) 56 Herculis.......	37,8	52,7	7,7	22,4	37,4	52,5	16 . 49 . 7,7		16 . 48 . 22,60	C.
	(g) Σ 2120...........	32,3	47,6	2,6	18,1	33,7	48,8	16 . 59 . 4,2		16 . 58 . 18,19	C.
	α Herculis........	33,7	47,5	1,5	15,4	29,3	43,2	17 . 7 . 57,3		17 . 7 . 15,41	C.
	(h) Σ 2147...........	25,7	41,2	56,7	12,2	28,0	43,1	17 . 11 . 58,5		17 . 11 . 12,20	C.
	(g) Piazzi XVII. 94..	33,4	47,3	1,2	15,2	29,2	43,2	17 . 17 . 57,4		17 . 17 . 15,27	C.
	α Ophiuchi.......	43,5	57,2	11,0	24,6	38,8	52,3	17 . 28 . 6,3		17 . 27 . 24,81	C.
	(i) Σ 2213. *sf*.......	54,0	9,6	25,4	41,0	57,1	12,7	17 . 39 . 28,5		17 . 38 . 41,18	C.
	(k) Σ 2415...........	49,9	4,3	18,6	33,0	47,4	1,7	18 . 48 . 16,2		18 . 47 . 33,01	C.
	(l) Σ 2422...........	45,2	0,3	15,7	30,8	45,9	0,8	18 . 51 . 15,9		18 . 50 . 30,65	C.
	(m) ζ Aquilæ.........	16,0	30,1	43,8	57,5	11,7	25,2	18 . 58 . 39,3		18 . 57 . 57,66	C.
	ψ Sagittarii.......	56,4	11,2	26,2	41,1	56,0	10,9	19 . 6 . 26,0		19 . 5 . 41,11	C.
	(n) Σ 2525...........	11,3	26,3	41,4	56,5	11,6	......	19 . 20	+ 15,10	19 . 19 . 56,52	C.
	α Aquilæ.........	12,4	26,0	39,5	53,2	7,0	20,4	19 . 43 . 34,0		19 . 42 . 53,21	C.
	(o) β Aquilæ.........	41,5	54,7	8,4	21,6	35,6	49,0	19 . 48 . 2,6		19 . 47 . 21,91	C.
	(p) ☽ 2 L............	38,7	52,6	6,7	20,6	34,8	48,6	0 . 48 . 2,4		0 . 47 . 20,62	G.
	Aldebaran........	56,6	10,7	24,8	38,7	52,8	6,7	4 . 27 . 20,8		4 . 26 . 38,73	G.
	(q) Rigel............	1,9	15,5	29,0	42,5	56,3	10,0	5 . 7 . 23,5		5 . 6 . 42,67	G.
	α Orionis.........	42,9	56,4	10,0	23,5	37,3	51,0	5 . 47 . 4,2		5 . 46 . 23,61	G.
June 21	☉ 1 L............	12,9	27,7	42,4	57,2	12,2	26,6	5 . 56 . 41,7		5 . 55 . 57,25	G.
	☉ 2 L............	31,0	45,7	0,4	15,1	30,1	44,8	5 . 58 . 59,6		5 . 58 . 15,24	G.
June 22	(r) ☉ 1 L............	......	......	51,3	5,8	......	35,4	6 . 0 . 50,0	− 14,67	6 . 0 . 5,95	C.
	(r) ☉ 2 L............	39,3	54,2	8,7	......	......	......	6 . 2	+ 29,45	6 . 2 . 23,52	C.
	δ Ophiuchi.......	11,7	25,3	38,6	52,1	5,7	19,0	16 . 6 . 32,6		16 . 5 . 52,14	C.
	Antares..........	47,7	2,7	17,6	32,6	47,9	2,5	16 . 20 . 17,6		16 . 19 . 32,65	C.
	τ Scorpii.........	6,6	22,0	37,1	52,4	7,6	22,4	16 . 26 . 38,1		16 . 25 . 52,31	C.
	Mars 1 L.........	5,9	......	35,8	......	5,7	......	16 . 31 . 35,6	− 0,02	16 . 30 . 50,73	C.
	Mars 2 L.........	......	22,5	......	52,2	......	22,1	16 . 31	+ 0,03	16 . 30 . 52,30	C.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(*a*) Wire I. was written down 13,8. (*b*) Hurried. Counting corrected by adding 2ˢ. (*c*) Hurried and confused. Wire IV. was written down 27,8. (*d*) According to Struve the north preceding is the brighter star. (*e*) Vibrating. (*f*) Not seen double. (*g*) Observed as single. Night hazy and bad for observing. (*h*) The preceding of two nearly equal stars 23ˢ apart; observed as single. (*i*) The south following taken, as appearing the brighter. See June 15. (*k*) Seemed double. (*l*) Hurried. Wire I. was written down 46,2. This is the brightest and most southern star of a rhomb: observed as single. (*m*) Used for clock-error. (*n*) Not seen double. Confused observation; the two last wires, being discordant, are omitted. (*o*) Not good. I could not observe satisfactorily this night. (*p*) Faint. (*q*) Great unsteadiness. (*r*) Without dark glass: 2 L very doubtful.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,51	− 5,24	− 0,83	52,18	6,16	13,98	0,77	13,61	7 . 31 . 6,03	− 1,31	Procyon.
			29,85	43,60	13,75			7 . 35 . 43,70	− 1,59	Pollux.
			58,61					16 . 40 . 12,75		Mars' center.
			28,79					16 . 42 . 42,94	− 4,35	⁎ N.P.D. 115°. 20′.
			18,95	33,00	14,05			17 . 7 . 33,11	− 3,55	α Herculis.
			28,45	42,60	14,15			17 . 27 . 42,62	− 3,58	α Ophiuchi.
			44,57					17 . 38 . 58,74	− 3,37	Σ 2213. *sf.*
			46,10	0,65	14,55	0,76	14,37	5 . 7 . 0,63	− 0,93	Rigel.
			21,81					5 . 36 . 36,36		☉'s center.
			27,07	41,63	14,56			5 . 46 . 41,62	− 1,21	α Orionis.
			51,52	6,16	14,64			7 . 31 . 6,13	− 1,31	Procyon.
			29,17	43,60	14,43			7 . 35 . 43,78	− 1,59	Pollux.
			41,20	55,82	14,62					Polaris SP.
			56,18	11,12	14,94			16 . 6 . 11,06	− 3,72	δ Ophiuchi.
			36,83	51,81	14,98			16 . 19 . 51,72	− 4,32	Antares.
			30,58			0,77	15,14	5 . 40 . 45,90		☉'s center.
			46,78	2,28	15,50			10 . 0 . 2,24	− 1,94	Regulus.
			40,85	56,54	15,69					Polaris SP.
			17,72	33,23	15,51			14 . 8 . 33,31	− 3,04	Arcturus.
			47,01					15 . 19 . 2,64	− 3,46	⁎ N.P.D. 84°. 12′.
			20,21	35,91	15,70			15 . 36 . 35,85	− 3,50	α Serpentis.
			35,14					15 . 47 . 50,79	− 3,66	Σ 1985. *sf.*
			6,58					16 . 1 . 22,23	− 3,33	Σ 2011.
			55,49	11,13	15,64			16 . 6 . 11,15	− 3,73	δ Ophiuchi.
	− 6,38	+ 0,01	17,32			0,61	17,55	16 . 33 . 35,29		Mars' center.
			22,21					16 . 48 . 40,19	− 3,42	56 Herculis.
			17,79					16 . 58 . 35,77	− 3,41	Σ 2120.
			15,10	33,03	17,93			17 . 7 . 33,08	− 3,58	α Herculis.
			11,79					17 . 11 . 29,78	− 3,42	Σ 2147.
			14,95					17 . 17 . 32,94	− 3,57	Piazzi XVII. 94.
			24,51	42,64	18,13			17 . 27 . 42,51	− 3,62	α Ophiuchi.
			40,76					17 . 38 . 58,76	− 3,41	Σ 2213. *sf.*
			32,67					18 . 47 . 50,70	− 3,50	Σ 2415.
			30,26					18 . 50 . 48,29	− 3,44	Σ 2422.
			57,36	15,26	17,90			18 . 58 . 15,39	− 3,57	ζ Aquilæ.
			41,05					19 . 5 . 59,09	− 4,41	ψ Sagittarii.
			56,13					19 . 20 . 14,17	− 3,39	Σ 2525.
			52,93	11,02	18,09			19 . 43 . 10,98	− 3,58	α Aquilæ.
			21,64	39,68	18,04			19 . 47 . 39,69	− 3,59	β Aquilæ.
			20,23			0,64	18,11	0 . 47 . 38,36		☽ 2 L.
			38,41	56,59	18,18			4 . 26 . 56,64	− 1,47	Aldebaran.
			42,49	0,71	18,22			5 . 7 . 0,73	− 0,99	Rigel.
			23,33	41,68	18,35			5 . 46 . 41,59	− 1,26	α Orionis.
			5,89					5 . 57 . 24,16		☉'s center.
			14,38			0,72	18,86	6 . 1 . 33,42		☉'s center.
			51,84	11,14	19,30			16 . 6 . 11,18	− 3,74	δ Ophiuchi.
			32,59	51,83	19,24			16 . 19 . 51,94	− 4,34	Antares.
			52,27					16 . 26 . 11,62	− 4,43	τ Scorpii.
			51,46					16 . 31 . 10,81		Mars' center.

June 26. 3^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
June 22	Σ 2087. *np*........	59,6	14,3	29,1	43,7	58,6	13,1	16 . 36 . 28,2		16 . 35 . 43,80	C.
	(*a*) ⁎ N.P.D. 115°. 20′.	39,1	54,0	8,7	23,5	38,7	53,4	16 . 43 . 8,4		16 . 42 . 23,68	C.
	56 Herculis.......	36,5	51,4	6,2	21,3	36,5	51,3	16 . 49 . 6,4		16 . 48 . 21,37	C.
	(*b*) α Herculis	32,2	46,0	0,2	......	......	......	17 . 7	+ 27,83	17 . 7 . 13,96	C.
	(*b*) α Ophiuchi	42,2	55,5	9,8	......	......	......	17 . 27	+ 27,62	17 . 27 . 23,45	C.
	☽ 2 L.............	42,9	57,3	11,8	26,3	40,9	55,4	2 . 24 . 10,0		2 . 23 . 26,37	G.
	(*c*) Aldebaran	55,2	9,2	23,1	37,2	51,6	5,2	4 . 27 . 19,3		4 . 26 . 37,26	G.
	(*c*) Rigel............	0,3	13,9	27,8	40,9	55,0	8,4	5 . 7 . 22,2		5 . 6 . 41,21	G.
June 23	Polaris SP........	37.11,2	45.41,5	54. 1,3	......	10.57,5	19.22,3	13 . 27 . 48,7	+ 0,24	13 . 2 . 30,66	C.
	(*d*) Arcturus.........	30,5	44,8	59,2	13,6	28,1	42,2	14 . 8 . 56,7		14 . 8 . 13,58	C.
June 24	Regulus	0,6	14,2	28,0	41,7	......	......	9 . 59	+ 20,74	9 . 59 . 41,86	C.
June 25	β Leonis.........	2,4	16,3	30,1	44,0	58,4	12,1	11 . 41 . 26,2		11 . 40 . 44,21	C.
June 26	δ Ophiuchi........	8,8	22,2	35,7	49,2	3,0	16,2	16 . 6 . 29,8		16 . 5 . 49,27	C.
	(*e*) Antares...........	44,6	0,0	14,6	29,5	44,8	59,6	16 . 20 . 14,6		16 . 19 . 29,68	C.
	Mars 1 L.........	45,8	0,6	15,6	30,8	45,6	......	16 . 26	+ 14,88	16 . 26 . 30,56	C.
	(*f*) Σ 2120............	28,1	43,4	58,4	14,1	29,5	44,6	16 . 59 . 0,0		16 . 58 . 14,01	C.
	α Herculis........	29,6	43,3	57,2	11,1	25,3	39,0	17 . 7 . 52,9		17 . 7 . 11,20	C.
	(*g*) ⁎ N.P.D. 60°. 55′.	42,8	58,2	14,0	29,0	44,4	0,0	17 . 12 . 15,3		17 . 11 . 29,10	C.
June 27	(*h*) ⨀ 1 L............	5,5	20,2	34,7	49,4	4,3	......	6 . 21	+ 14,69	6 . 20 . 49,51	C.
	⨀ 2 L............	......	......	52,5	7,4	22,2	37,0	6 . 23 . 51,5	− 14,70	6 . 23 . 7,42	C.
June 28	(*i*) ⨀ 1 L............	14,2	29,0	43,6	58,0	12,2	......	6 . 25	+ 14,69	6 . 24 . 58,09	C.
	⨀ 2 L............	32,0	46,5	1,1	16,0	30,8	45,3	6 . 28 . 0,2		6 . 27 . 15,99	C.
	(*b*) Arcturus.........	......	......	......	10,0	24,5	38,8	14 . 8 . 53,3	− 21,52	14 . 8 . 10,13	C.
	ε Bootis...........	2,2	17,5	32,6	47,8	3,5	18,3	14 . 38 . 33,6		14 . 37 . 47,93	C.
	α^2 Libræ	10,7	24,6	38,3	52,3	6,5	20,2	14 . 42 . 34,5		14 . 41 . 52,44	C.
	Antares...........	43,4	58,5	13,4	28,3	43,6	58,4	16 . 20 . 13,5		16 . 19 . 28,45	C.
	(*f*) Σ 2120............	27,1	42,1	57,3	12,5	28,2	43,3	16 . 58 . 58,7		16 . 58 . 12,74	C.
	(*k*) ⁎ N.P.D. 89°. 27′.	53,5	7,1	20,4	34,0	47,6	0,8	17 . 5 . 14,2		17 . 4 . 33,94	C.
	α Herculis........	28,2	42,3	56,0	10,0	24,2	37,9	17 . 7 . 51,9		17 . 7 . 10,07	C.
	⁎ N.P.D. 60°. 55′..	41,4	57,1	12,2	27,8	43,3	58,7	17 . 12 . 14,1		17 . 11 . 27,80	C.
July 6	α Coronæ Borealis.	51,6	6,8	22,0	37,1	52,3	7,3	15 . 28 . 22,5		15 . 27 . 37,09	C.
	(*l*) α Serpentis	26,4	39,9	53,2	7,0	20,5	34,1	15 . 36 . 47,8		15 . 36 . 6,99	C.
	(*m*) Aldebaran	45,6	59,4	13,7	27,6	41,9	55,6	4 . 27 . 9,8		4 . 26 . 27,66	C.
July 7	(*n*) Polaris SP. M.....	0.26,2	1.10,0	1.53,6	2.35,0	3.17,7	4. 0,8	13 . 4 . 42,0	− 1,42	13 . 2 . 33,62	C.
	Arcturus.........	20,6	35,2	49,3	3,5	18,1	32,3	14 . 8 . 46,7		14 . 8 . 3,67	C.
	α^2 Libræ	4,1	18,2	32,0	46,1	0,2	14,0	14 . 42 . 28,1		14 . 41 . 46,10	C.
	β^1 Scorpii.........	10,3	24,8	39,1	53,2	7,8	21,8	15 . 56 . 36,3		15 . 55 . 53,33	C.
	δ Ophiuchi........	1,2	14,6	28,0	41,5	55,1	8,4	16 . 6 . 22,0		16 . 5 . 41,54	C.
	(*o*) Mars 1 L..........	19,9	35,2	50,0	4,8	......	......	16 . 19	+ 22,35	16 . 19 . 4,82	C.
	(*p*) ⁎ N.P.D. 60°. 55′.	35,1	50,6	6,0	21,1	37,1	52,2	17 . 12 . 7,6		17 . 11 . 21,38	C.
	α Ophiuchi.......	31,7	45,5	59,3	13,1	27,1	40,7	17 . 27 . 54,6		17 . 27 . 13,14	C.
July 8	⨀ 1 L............	24,8	39,4	54,0	8,7	23,5	38,0	7 . 6 . 52,7		7 . 6 . 8,73	C.
	⨀ 2 L............	......	......	11,1	25,8	40,4	54,8	7 . 9 . 9,3	− 14,61	7 . 8 . 25,67	C.
	α Serpentis........	24,9	38,5	52,0	5,5	19,4	32,7	15 . 36 . 46,3		15 . 36 . 5,61	C.
	(*b*) β^1 Scorpii.........	......	......	......	52,7	7,1	21,2	15 . 56 . 35,6	− 21,42	15 . 55 . 52,73	C.
	☽ 1 L..............	16,2	31,4	46,7	2,1	17,6	32,6	16 . 31 . 48,2		16 . 31 . 2,11	C.
July 11	(*q*) Aldebaran.	42,3	56,5	10,6	24,5	38,8	52,6	4 . 27 . 6,7		4 . 26 . 24,57	C.
July 14	(*r*) Polaris SP. M. ...	0.36,0	1.20,8	2. 4,0	2.45,0	3.28,5	4.12,5	13 . 4 . 56,6	− 1,42	13 . 2 . 44,78	C.
	α Herculis........	16,5	30,6	44,5	58,6	12,4	26,2	17 . 7 . 40,1		17 . 6 . 58,42	C.
	α Ophiuchi........	26,4	40,5	54,1	8,0	21,8	35,6	17 . 27 . 49,4		17 . 27 . 7,97	C.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.
From α Herculis July 14... WEST. .... *GFEDCBA*.

(*a*) Faint. (*b*) Cloudy. (*c*) Great unsteadiness. (*d*) Good. (*e*) Not satisfactory. (*f*) Observed as single. (*g*) A star of about the 8th magnitude. (*h*) Cloudy and perplexing: 2 L hurried. (*i*) This Limb doubtful from clouds. (*k*) Magnitude, 7,8. (*l*) Disturbed. (*m*) Very unsteady. (*n*) Clouds flitting by. Wire IV. (before taking which the Telescope was accidentally struck) was written down hurriedly 30,5, and is altered by conjecture. (*o*) Disturbed. Wire IV. was set down 5,8. (*p*) The star following Σ 2147. (*q*) Confusedly. Wires III, VI, and VII, were written down, 9,6, 43,6 and 57,7. (*r*) Very unsteady. The counting for wire VI. was 1^s in defect: correction applied accordingly.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,51	− 6,38	+ 0,01	43,43			0,72	18,86	16. 36. 2,79	− 3,43	Σ 2087. *np.*
			23,62					16. 42. 42,98	− 4,40	⁎ N.P.D. 115°. 20′.
			20,98					16. 48. 40,34	− 3,43	56 Herculis.
			13,65	33,04	19,39			17. 7. 33,02	− 3,59	α Herculis.
			23,15	42,65	19,50			17. 27. 42,53	− 3,63	α Ophiuchi.
			26,04			0,70	19,55	2. 23. 45,66		☽ 2 L.
			36,94	56,64	19,70			4. 26. 56,62	− 1,52	Aldebaran.
			41,03	0,74	19,71			5. 7. 0,73	− 1,02	Rigel.
			41,56	1,47	19,91					Polaris SP.
			13,24	33,18	19,94			14. 8. 33,20	− 2,99	Arcturus.
			41,56	0,24	20,68	0,74	20,37			Regulus.
			43,89	5,26	21,37	0,66	21,05			β Leonis.
			48,97	11,14	22,17	0,64	21,74	16. 6. 11,14	− 3,74	δ Ophiuchi.
			29,62	51,84	22,22			16. 19. 51,80	− 4,35	Antares.
			30,50					16. 26. 52,68		Mars 1 L.
			13,61					16. 58. 35,80	− 3,43	Σ 2120.
			10,89	33,05	22,16			17. 7. 33,09	− 3,60	α Herculis.
			28,69					17. 11. 50,89	− 3,43	⁎ N.P.D. 60°. 55′.
			58,11			0,61	22,35	6. 22. 20,62		☉'s center.
			6,68				22,99	6. 26. 29,83		☉'s center.
			9,79	33,13	23,34			14. 8. 33,14	− 2,94	Arcturus.
			47,53	10,87	23,34			14. 38. 10,89	− 3,03	ε Bootis.
			52,31	15,79	23,48			14. 42. 15,67	− 3,57	α² Libræ.
			28,39	51,85	23,46			16. 19. 51,79	− 4,36	Antares.
			12,34					16. 58. 35,76	− 3,42	Σ 2120.
			33,70					17. 4. 57,12	− 3,83	⁎ N.P.D. 89°. 27′.
			9,76	33,05	23,29			17. 7. 33,18	− 3,60	α Herculis.
			27,39					17. 11. 50,82	− 3,44	⁎ N.P.D. 60°. 55′.
	− 6,34	− 0,51	36,68	5,68	29,00	0,79	28,56			α Coronæ Borealis.
			6,70	35,84	29,14					α Serpentis.
			27,33	56,97	29,64	0,75	29,37	4. 26. 56,84	− 1,85	Aldebaran.
			43,61	13,30	29,69					Polaris SP.
			3,31	33,03	29,72			14. 8. 33,12	− 2,84	Arcturus.
			45,94	15,72	29,78			14. 42. 15,77	− 3,50	α² Libræ.
			53,19					15. 56. 23,06	− 4,02	β¹ Scorpii.
			41,22	11,12	29,90			16. 6. 11,09	− 3,72	δ Ophiuchi.
			4,72					16. 19. 34,60		Mars 1 L.
			20,96					17. 11. 50,87	− 3,42	⁎ N.P.D. 60°. 55′.
			12,82	42,71	29,89			17. 27. 42,74	− 3,69	α Ophiuchi.
			16,82			0,73	30,04	7. 7. 47,08		☉'s center.
			5,32	35,83	30,51					α Serpentis.
			52,59					15. 56. 23,11	− 4,02	β¹ Scorpii.
			2,01					16. 31. 32,55		☽ 1 L.
	− 6,29		24,24	57,10	32,86	0,82	32,71			Aldebaran.
	− 0,17		42,84	19,11	36,27	0,76	34,10	1. 3. 17,35	− 18,82	Polaris SP.
+ 0,17	− 0,14	+ 0,82	58,45	33,04	34,59			17. 7. 33,09	− 3,59	α Herculis.
			8,01	42,70	34,69			17. 27. 42,66	− 3,68	α Ophiuchi.

July 7. 7^h, the Transit was levelled.

July 13. 7^h, the Transit was levelled. After this levelling the screws of the East Pier were turned to diminish the Level Error.

July 14. $6\frac{1}{2}^h$, the Transit was reversed and the Error of Collimation determined. Just before and after the reversion, the Level Errors were found to be $-0'',17$ and $-0'',14$ respectively.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
July 14	70 Ophiuchi. *np*...	20,0	33,5	46,9	0,6	14,1	27,4	17 . 57 . 41,1		17 . 57 . 0,51	C.
	(*a*) Σ 2296...........	16,5	30,2	43,3	57,2	10,6	24,2	18 . 7 . 37,5		18 . 6 . 57,07	C.
	ζ Aquilæ.........	59,1	13,2	26,7	40,7	54,6	8,5	18 . 58 . 22,5		18 . 57 . 40,75	C.
	Piazzi XIX. 85...	7,1	20,7	34,1	47,6	1,1	14,4	19 . 14 . 28,1		19 . 13 . 47,59	C.
	(*b*) Σ 2525...........	54,2	9,3	24,4	39,6	55,0	10,1	19 . 20 . 25,1		19 . 19 . 39,68	C.
	α Aquilæ.........	55,7	9,4	23,0	36,6	50,2	3,7	19 . 43 . 17,5		19 . 42 . 36,59	C.
	β Aquilæ.........	24,5	38,2	51,6	5,5	19,0	32,4	19 . 47 . 45,9		19 . 47 . 5,30	C.
July 15	⊙ 1 L.	51,8	6,3	20,5	35,5	50,2	4,6	7 . 35 . 19,1		7 . 34 . 35,43	C.
	⊙ 2 L.	......	22,4	36,8	51,5	6,0	20,5	7 . 37 . 34,9	− 7,26	7 . 36 . 51,42	C.
	Arcturus.........	14,4	29,0	43,1	57,5	11,8	26,1	14 . 8 . 40,5		14 . 7 . 57,49	C.
	(*c*) δ Ophiuchi........	55,2	......	......	35,8	49,3	......	16 . 6 . 16,2	− 3,40	16 . 5 . 35,72	C.
	(*d*) Mars 1 L.........	32,2	47,1	1,7	16,8	31,7	......	16 . 18	+ 14,89	16 . 18 . 16,79	C.
	α Herculis........	15,7	29,8	43,6	57,8	11,6	25,4	17 . 7 . 39,5		17 . 6 . 57,63	C.
	α Ophiuchi.......	25,7	39,6	53,3	7,3	21,1	34,8	17 . 27 . 48,7		17 . 27 . 7,22	C.
	(*e*) ⚹ N.P.D. 48°. 12′.	49,1	7,2	25,1	43,3	1,6	19,5	17 . 46 . 37,6		17 . 45 . 43,34	C.
	(*f*) 70 Ophiuchi. *np*...	19,2	32,8	46,1	59,8	13,3	26,6	17 . 57 . 40,2		17 . 56 . 59,72	C.
	(*g*) δ Ursæ Minoris...	11. 5,6	14.53,5	18.38,7	22.26,3	26.13,2	30. 0,8	18 . 33 . 48,9		18 . 22 . 26,71	C.
	(*g*) δ Ursæ Minoris M.	20.32,8	21.10,5	21.49,0	22.26,3	23. 4,8	23.43,8	18 . 24 . 22,0	− 0,64	18 . 22 . 26,39	C.
July 17	(*h*) ⊙ 1 L.............	55,4	9,8	24,2	38,8	53,3	7,7	7 . 43 . 22,3		7 . 42 . 38,79	C.
	(*h*) ⊙ 2 L.............	......	25,4	39,9	54,6	8,9	23,3	7 . 45 . 37,9	− 7,24	7 . 44 . 54,43	C.
	δ Ophiuchi........	53,4	7,1	20,5	34,0	47,5	0,9	16 . 6 . 14,5		16 . 5 . 33,99	C.
	Mars 1 L.........	56,2	10,9	25,7	41,1	55,8	......	16 . 18	+ 14,89	16 . 18 . 40,83	C.
	α Herculis........	14,1	28,2	41,8	56,0	10,1	23,7	17 . 7 . 37,6		17 . 6 . 55,93	C.
	Σ 2178. *np*........	......	44,8	1,1	17,6	34,0	50,5	17 . 24 . 7,0	− 8,22	17 . 23 . 17,61	C.
	(*i*) α Ophiuchi.......	24,2	37,8	51,5	5,4	19,2	33,2	17 . 27 . 46,9		17 . 27 . 5,46	C.
	Σ 2296............	14,1	27,5	40,9	54,6	8,1	21,6	18 . 7 . 35,1		18 . 6 . 54,56	C.
July 18	(*k*) β Tauri...........	......	......	......	......	1,4	16,7	5 . 16 . 32,1	− 30,63	5 . 15 . 46,10	C.
	(*l*) α Orionis........	......	36,6	49,9	3,7	17,2	30,7	5 . 46	0,00	5 . 46 . 3,62	C.
July 19	α Coronæ Borealis.	41,4	56,6	11,8	27,1	42,2	57,2	15 . 28 . 12,4		15 . 27 . 26,96	C.
	(*m*) β Serpentis.......	39,3	53,3	......	21,5	35,4	49,4	15 . 39 . 3,6	− 2,36	15 . 38 . 21,39	C.
	δ Ophiuchi........	52,0	5,5	19,0	32,5	46,1	59,6	16 . 6 . 13,2		16 . 5 . 32,55	C.
	(*n*) Mars 1 L.........	34,5	49,6	4,3	19,4	34,3	48,9	16 . 20 . 3,9		16 . 19 . 19,27	C.
	τ Scorpii.........	47,0	2,4	17,5	32,9	48,2	3,5	16 . 26 . 18,7		16 . 25 . 32,88	C.
	(o) Σ 2178............	26,6	43,2	59,6	16,3	32,7	49,0	17 . 24 . 5,6		17 . 23 . 16,14	C.
	(*p*) Polaris M.........	0.44,0	1.25,0	2. 5,6	2.46,0	3.34,5	4.13,0	1 . 4 . 57,5	− 1,42	1 . 2 . 47,95	C.
	(*q*) Polaris............	......	......	......	2.46,0	11.12,0	19.37,0	1 . 28 . 3,5	− 12 . 38,98	1 . 2 . 45,64	C.
	(*r*) β Arietis.........	39,8	54,1	8,5	23,0	37,3	51,6	1 . 46 . 5,8		1 . 45 . 22,87	C.
	α Arietis.........	0,4	15,1	29,5	44,5	59,0	13,4	1 . 58 . 28,1		1 . 57 . 44,28	C.
	☽ 2 L............	52,4	6,8	21,0	35,7	50,1	4,5	2 . 3 . 18,9		2 . 2 . 35,63	C.
	γ Ceti............	53,6	7,1	20,5	34,0	47,5	1,1	2 . 35 . 14,6		2 . 34 . 34,06	C.
	α Ceti............	47,8	1,4	14,7	28,5	42,0	55,4	2 . 54 . 8,9		2 . 53 . 28,39	C.
	β Tauri...........	59,7	15,0	30,2	45,7	0,8	16,2	5 . 16 . 31,6		5 . 15 . 45,60	C.
July 20	⊙ 1 L.............	57,2	11,8	25,9	40,6	55,0	9,4	7 . 55 . 23,8		7 . 54 . 40,52	C.
	(*s*) ⊙ 2 L.............	12,3	26,8	41,0	55,7	10,0	24,6	7 . 57 . 39,0		7 . 56 . 55,63	C.
July 21	Mars 1 L.........	27,3	42,3	57,1	12,3	27,1	......	16 . 20	+ 14,90	16 . 20 . 12,12	G.
	B.A.C. 5831......	......	27,5	42,1	57,0	11,6	26,2	17 . 8 . 40,8	− 7,36	17 . 7 . 56,84	C.
	y Ophiuchi.......	8,2	23,6	38,4	54,1	9,3	24,5	17 . 13 . 39,7		17 . 12 . 53,97	C.
	α Ophiuchi.......	21,7	35,5	49,1	3,0	16,8	30,7	17 . 27 . 44,5		17 . 27 . 3,04	C.
	(*t*) ⚹ N.P.D. 48°. 12′.	44,8	2,8	20,5	39,1	57,1	15,2	17 . 46 . 33,3		17 . 45 . 38,98	C.
	(*u*) *g* Sagittarii........	53,2	8,3	23,1	38,7	54,0	8,6	18 . 8 . 24,2		18 . 7 . 38,59	C.
	(*x*) ⚹ N.P.D. 71°. 50′..	10,5	24,8	38,7	53,3	7,2	21,2	18 . 20 . 35,6		18 . 19 . 53,04	C.
	e Serpentis........	34,6	48,2	1,6	15,1	28,3	42,1	18 . 23 . 55,6		18 . 23 . 15,07	C.
	Σ 2375. *np*........	29,1	42,7	56,0	9,9	23,2	36,9	18 . 37 . 50,5		18 . 37 . 9,76	C.
	(o) Σ 2409............	12,9	26,6	40,5	54,4	8,3	22,2	18 . 44 . 36,0		18 . 43 . 54,41	C.
	Σ 2449. *sf*.........	29,1	42,7	56,1	9,9	23,4	37,0	18 . 58 . 50,6		18 . 58 . 9,83	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Cloudy. Only one star seen. (*b*) Observed as single. There was a smaller star of less N.P.D. and nearly the same R.A. (*c*) Cloudy. Wire III, written down 21,8, is rejected. (*d*) Very cloudy. (*e*) The magnitude of this star is 8,9. (*f*) The counting being found 10ˢ in advance, 10ˢ have been deducted from each of the four last wires. (*g*) Steady. The micrometer observation rather hurried. (*h*) Great vibration. (*i*) Not good. (*k*) Unsteady. The Temperature fell 12° between July 17 and July 19. (*l*) Clouds flitting past. (*m*) Cloudy and faint: quite doubtful. (*n*) Ill-defined and tremulous. (o) Not seen double. (*p*) So extremely unsteady that the times of transit were not certain to several seconds. (*q*) Better than the micrometer observation, the star having become more steady. (*r*) Faint at wire VII. (*s*) Cloudy at the three last wires. (*t*) A star of 9th magnitude. Wire VII. was set down 32,3. (*u*) A low star: observation unsatisfactory. (*x*) Faint: of 9th magnitude.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,17	- 0,14	+ 0,82	0,55			0,76	34,10	17 . 57 . 35,22	- 3,94	70 Ophiuchi. *np.*
			57,12					18 . 7 . 31,79	- 4,09	Σ 2296.
			40,79	15,51	34,72			18 . 58 . 15,49	- 3,82	ζ Aquilæ.
			47,64					19 . 14 . 22,35	- 4,17	Piazzi XIX. 85.
			39,71					19 . 20 . 14,42	- 3,68	Σ 2525.
			36,63	11,39	34,76			19 . 43 . 11,35	- 3,95	α Aquilæ.
			5,34	40,05	34,71			19 . 47 . 40,07	- 3,96	β Aquilæ.
			} 43,46			0,80	34,85	7 . 36 . 18,56		⊙'s center.
			57,52	32,93	35,41			14 . 8 . 32,84	- 2,74	Arcturus.
			35,76	11,07	35,31			16 . 6 . 11,15	- 3,67	δ Ophiuchi.
			16,86					16 . 18 . 52,25		Mars 1 L.
			57,66	33,04	35,38			17 . 7 . 33,08	- 3,59	α Herculis.
			7,26	42,70	35,44			17 . 27 . 42,69	- 3,68	α Ophiuchi.
			43,36					17 . 46 . 18,80	- 3,32	⁎ N.P.D. 48°. 12′.
			59,76					17 . 57 . 35,21	- 3,94	70 Ophiuchi. *np.*
			26,17	2,00	35,83			18 . 23 . 1,63	- 4,48	δ Ursæ Minoris.
			25,85	2,00	36,15			18 . 23 . 1,31	- 4,48	δ Ursæ Minoris.
			} 46,64			0,81	36,53	7 . 44 . 23,43		⊙'s center.
			34,03	11,06	37,03			16 . 6 . 11,10	- 3,66	δ Ophiuchi.
			40,90					16 . 19 . 17,98		Mars 1 L.
			55,96	33,03	37,07			17 . 7 . 33,07	- 3,58	α Herculis.
			17,63					17 . 23 . 54,75	- 3,32	Σ 2178. *np.*
			5,50	42,70	37,20			17 . 27 . 42,62	- 3,68	α Ophiuchi.
			54,61					18 . 7 . 31,75	- 4,10	Σ 2296.
			46,13	24,49	38,36	0,54	38,23	5 . 16 . 24,48	- 2,19	β Tauri.
			3,66	42,17	38,51			5 . 46 . 42,02	- 1,75	α Orionis.
			26,99	5,52	38,53			15 . 28 . 5,57	- 2,98	α Coronæ Borealis.
			21,42					15 . 39 . 0,00	- 3,20	β Serpentis.
			32,59	11,05	38,46			16 . 6 . 11,18	- 3,65	δ Ophiuchi.
			19,34					16 . 19 . 57,94		Mars 1 L.
			32,95					16 . 26 . 11,55	- 4,39	τ Scorpii.
			16,16					17 . 23 . 54,78	- 3,31	Σ 2178.
			46,68	23,50	36,82	0,48	38,75	1 . 3 . 25,45	- 23,21	Polaris.
			44,37	23,50	39,13			1 . 3 . 23,14	- 23,21	Polaris.
			22,90					1 . 46 . 1,68	- 2,95	β Arietis.
			44,31	23,15	38,84			1 . 58 . 23,10	- 2,93	α Arietis.
			35,66					2 . 3 . 14,45		☽ 2 L.
			34,10					2 . 35 . 12,90	- 2,51	γ Ceti.
			28,43	7,17	38,74			2 . 54 . 7,24	- 2,42	α Ceti.
			45,63	24,51	38,88			5 . 16 . 24,49	- 2,21	β Tauri.
			} 48,11					7 . 56 . 27,02		⊙'s center.
	+ 0,54		12,20			0,57	39,09	16 . 20 . 51,68		Mars 1 L.
			56,92					17 . 8 . 36,42	- 4,46	B.A.C. 5831.
			54,05					17 . 13 . 33,55	- 4,63	*y* Ophiuchi.
			3,12	42,68	39,56			17 . 27 . 42,63	- 3,66	α Ophiuchi.
			39,06					17 . 46 . 18,57	- 3,27	⁎ N.P.D. 48°.12′.
			38,67					18 . 8 . 18,19	- 4,80	*g* Sagittarii.
			53,11					18 . 20 . 32,64	- 3,72	⁎ N.P.D. 71°. 50′.
			15,14					18 . 23 . 54,67	- 4,08	*e* Serpentis.
			9,83					18 . 37 . 49,36	- 3,98	Σ 2375. *np.*
			54,49					18 . 44 . 34,02	- 3,85	Σ 2409.
			9,91					18 . 58 . 49,45	- 3,98	Σ 2449. *sf.*

On July 16, as I was sitting down to observe β Tauri, the Telescope accidentally received a blow.
July 23. 21^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
July 21	ψ Sagittarii......	35,0	49,8	4,6	19,7	34,7	49,5	19. 6. 4,4		19. 5.19,67	C.
	Σ 2525............	49,4	4,7	19,6	34,9	50,0	5,1	19.20.20,2		19.19.34,84	C.
	Σ 2576. *np*........	11,3	27,6	43,6	59,8	15,5	31,8	19.39.48,0		19.38.59,66	C.
	α Aquilæ........	51,1	4,6	18,1	31,8	45,5	59,0	19.43.12,7		19.42.31,83	C.
	β Aquilæ........	20,0	33,5	46,8	0,8	14,2	27,6	19.47.41,1		19.47. 0,57	C.
	(*a*) Σ 2624...........	12,3	28,9	45,1	2,2	18,6	35,2	19.57.51,7		19.57. 2,00	C.
	(*b*) α^2 Capricorni.....	3,6	17,4	31,0	45,1	58,9	12,8	20. 9.26,7		20. 8.45,07	C.
	(*b*) Σ 2665...........	......	59,1	12,7	26,8	40,7	54,6	20.12. 8,5	− 6,93	20.11.26,80	C.
	β Aquarii.........	1,2	14,8	28,2	42,0	55,5	9,1	21.23.22,6		21.22.41,91	C.
	(*c*) Juno.............	50,3	4,0	17,2	31,1	44,6	57,8	21.43.....	+ 6,73	21.43.30,90	C.
	α Aquarii.........	26,8	40,5	53,7	7,5	20,9	34,4	21.57.47,7		21.57. 7,36	C.
July 22	(*d*) δ Ophiuchi........	50,4	4,0	17,3	......	......	......	16. 5.....	+ 27,01	16. 5.30,91	C.
	(*d*) Antares...........	......	......	56,5	......	26,5	41,4	16.19......	− 9,96	16.19.11,51	C.
July 23	β Tauri..........	57,6	12,9	28,0	43,6	58,9	14,1	5.16.29,5		5.15.43,51	C.
July 24	δ Ursæ Minoris...	10.59,2	14.47,0	18.31,9	22.22,2	26. 8,8	29.55,4	18.33.42,7		18.22.21,03	G.
	(*e*) α Aquilæ.........	49,4	2,7	16,4	30,0	43,7	57,3	19.43.10,9		19.42.30,05	C.
	(*f*) ⚹ N.P.D. 67°.59′.	36,5	51,1	5,4	......	34,9	49,2	19.48. 3,7	+ 0,01	19.47.20,14	C.
	(*g*) Σ 2624............	10,5	27,1	43,5	0,4	16,9	33,2	19.57.50,1		19.57. 0,24	C.
	α^2 Capricorni.....	1,9	15,7	29,2	43,3	57,2	10,9	20. 9.24,9		20. 8.43,30	C.
	(*h*) Σ 2757...........	58,0	19,8	41,1	3,4	25,2	46,8	21. 0. 8,7		20.59. 3,28	C.
	β Aquarii........	59,6	13,0	26,5	40,2	53,6	7,2	21.23.20,8		21.22.40,12	C.
	Juno.............	9,5	23,2	36,6	50,2	3,7	17,2	21.42.30,5		21.41.50,12	C.
July 27	(*i*) ⊙ 1 L............	43,4	57,8	11,9	26,3	40,8	55,0	8.23. 9,4		8.22.26,37	G.
	(*i*) ⊙ 2 L............	57,2	11,8	26,0	40,5	54,7	9,0	8.25.23,4		8.24.40,37	G.
July 28	(*k*) ⊙ 1 L............	38,9	53,4	7,5	21,8	36,3	50,7	8.27. 4,8		8.26.21,91	C.
	(*k*) ⊙ 2 L............	53,1	7,0	21,2	35,8	......	4,2	8.29.....	+ 11,44	8.28.35,70	C.
July 31	ψ Sagittarii......	29,1	44,0	58,7	13,8	28,8	43,7	19. 5.58,6		19. 5.33,81	C.
	(*l*) Σ 2525...........	43,2	58,7	13,6	28,4	44,1	59,1	19.20.14,2		19.19.28,76	C.
	(*m*) α Aquilæ.........	......	......	......	26,1	39,5	53,1	19.42.....	− 13,64	19.42.25,93	C.
	Rigel............	34,7	48,3	1,8	15,6	29,2	42,8	5. 6.56,4		5. 6.15,54	C.
	β Tauri..........	52,9	8,4	23,3	38,9	54,2	9,5	5.16.24,9		5.15.38,87	C.
Aug. 1	(*n*) ⊙ 1 L...........	15,6	29,8	......	......	......	26,9	8.42.....	+ 14,19	8.41.58,29	C.
	(o) ☽ 1 L............	49,5	3,8	17,9	32,4	46,8	1,1	13.11.15,3		13.10.32,40	G.
	Spica............	......	......	58,3	12,2	25,8	39,7	13.16.53,4	− 13,67	13.16.12,21	G.
	Mars 1 L.........	15,4	30,4	45,1	0,3	15,4	30,3	16.29.45,2		16.29. 0,30	C.
	α Aquilæ.........	44,3	58,0	11,2	25,4	38,7	52,5	19.43. 6,2		19.42.25,19	C.
	(*p*) ⚹ N.P.D. 67°.49′.	2,6	17,1	31,7	46,5	0,9	15,3	19.47.30,1		19.46.46,32	C.
	(*q*) Σ 2624. *np*.......	5,2	22,3	38,7	55,5	11,9	28,5	19.57.45,0		19.56.55,30	C.
	α^2 Capricorni.....	57,1	10,8	24,5	38,6	52,5	6,1	20. 9.19,8		20. 8.38,49	C.
	Σ 2757. *f*.........	53,1	15,0	36,2	58,5	20,2	42,0	21. 0. 3,6		20.58.58,38	C.
	β Aquarii........	54,6	8,2	21,7	35,5	49,0	2,5	21.23.16,0		21.22.35,36	C.
	Juno.............	52,7	6,2	19,3	33,1	46,6	0,2	21.37.13,6		21.36.33,10	C.
Aug. 2	β Serpentis.......	......	45,1	59,0	13,1	27,2	41,1	15.38.55,2	− 7,00	15.38.13,12	C.
	(*r*) δ Ophiuchi.......	43,6	57,3	10,6	24,2	37,7	......	16. 5.....	+ 13,48	16. 5.24,16	C.
	(*r*) Antares...........	19,8	34,9	49,6	5,0	19,8	......	16.19.....	+ 14,98	16.19. 4,80	C.
	(*r*) Mars 1 L..........	......	......	......	......	22,2	37,2	16.30.52,0	− 29,92	16.30. 7,21	C.
	(*r*) α Herculis.......	4,4	18,4	32,2	46,4	0,2	14,1	17. 7.28,1		17. 6.46,26	C.
	y Ophiuchi.......	1,0	16,3	31,2	46,9	2,0	17,2	17.13.32,4		17.12.46,72	C.
	α Ophiuchi.......	14,4	28,2	42,0	55,8	9,7	23,5	17.27.37,3		17.26.55,84	C.
	(*s*) δ Ursæ Minoris...	10.51,6	14.39,0	18.23,2	22.13,3	25.59,7	29.45,6	18.33.33,8		18.22.12,31	C.
	Σ 2375. *np*.......	22,0	35,5	49,0	2,7	16,2	29,8	18.37.43,2		18.37. 2,63	C.
	(*t*) Σ 2448............	29,3	45,7	1,9	19,1	35,7	52,1	18.58. 8,0		18.57.18,83	C.
	(*u*) ψ Sagittarii......	......	43,1	57,6	12,7	27,7	42,7	19. 5.57,4	− 7,46	19. 5.12,74	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) A minute companion preceded. (*b*) Bad illumination of the field. (*c*) Extremely faint and doubtful: not taken exactly in the middle of the field. (*d*) Clouds. (*e*) Bad observation. (*f*) Hurried. Wires II. and III. have been diminished 1ˢ for error of counting, which was corrected before wire V. by looking at the clock-face. The star is of magnitude 7,8. (*g*) Seen to be a close double preceded by a small comes. (*h*) Observed as single. A smaller of greater N.P.D. followed. (*i*) Clouds passing. (*k*) Extremely cloudy and doubtful. (*l*) Intervals bad. A star of less N.P.D. preceded a second or two. (*m*) Cloudy and doubtful. Not used for clock-rate. (*n*) Wire VI. very doubtful from clouds. The temperature was higher than on July 19 by 6° or 7°. (*o*) Often cloudy. (*p*) A star of mag. 8, preceding Σ 2600. (*q*) The *np* of the close double. (*r*) Cloudy. (*s*) Wire II. doubtful. (*t*) Cloudy and extremely faint: observed as single. A nearly equal star north follows. (*u*) Cloudy. The observation has been increased 5ˢ.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,17	+ 0,54	+ 0,82	19,75			0,57	39,09	19 . 5 . 59,29	− 4,82	ψ Sagittarii.
			34,92					19 . 20 . 14,47	− 3,71	Σ 2525.
			59,73					19 . 39 . 39,29	− 3,68	Σ 2576. *np.*
			31,91	11,46	39,55			19 . 43 . 11,47	− 4,02	α Aquilæ.
			0,65	40,13	39,48			19 . 47 . 40,21	− 4,04	β Aquilæ.
			2,07					19 . 57 . 41,63	− 3,69	Σ 2624.
			45,15	24,76	39,61			20 . 9 . 24,72	− 4,41	α² Capricorni.
			26,88					20 . 12 . 6,45	− 3,92	Σ 2665.
			41,99	21,57	39,58			21 . 23 . 21,59	− 4,12	β Aquarii.
			30,97					21 . 44 . 10,58		Juno.
			7,43	47,08	39,65			21 . 57 . 47,04	− 3,94	α Aquarii.
			30,99	11,02	40,03	0,62	39,68			δ Ophiuchi.
			11,59	51,75	40,16					Antares.
			43,59	24,63	41,04	0,60	40,88	5 . 16 . 24,60	− 2,23	β Tauri.
			21,12	0,23	39,11			18 . 23 . 2,46	− 2,71	δ Ursæ Minoris.
			30,13	11,47	41,34			19 . 43 . 11,50	− 4,03	α Aquilæ.
			20,21					19 . 48 . 1,58	− 3,83	⁎ N.P.D. 67°. 59′.
			0,31					19 . 57 . 41,69	− 3,70	Σ 2624.
			43,38	24,79	41,41			20 . 9 . 24,76	− 4,44	α² Capricorni.
			3,36					20 . 59 . 44,77	− 3,80	Σ 2757.
			40,20	21,61	41,41			21 . 23 . 21,62	− 4,16	β Aquarii.
			50,20					21 . 42 . 31,62		Juno.
		+ 2,11	} 33,49			0,61	42,71	8 . 24 . 16,41		☉'s center.
			} 28,93				43,32	8 . 28 . 12,46		☉'s center.
	+ 0,39		13,98			0,44	45,39	19 . 5 . 59,72	− 4,87	ψ Sagittarii.
			28,87					19 . 20 . 14,61	− 3,72	Σ 2525.
			26,06	11,51	45,45					α Aquilæ.
			15,68	1,58	45,90		45,83	5 . 7 . 1,60	− 1,86	Rigel.
			38,98	24,86	45,88			5 . 16 . 24,91	− 2,56	β Tauri.
			58,40					8 . 42 . 44,39		☉ 1 L.
			32,55					13 . 11 . 18,62		☽ 1 L.
			12,36	58,47	46,11			13 . 16 . 58,43	− 2,60	Spica.
			0,47					16 . 29 . 46,60		Mars 1 L.
			25,32	11,51	46,19			19 . 43 . 11,51	− 4,07	α Aquilæ.
			46,43					19 . 47 . 32,62	− 3,85	⁎ N.P.D. 67°. 49′.
			55,39					19 . 57 . 41,58	− 3,72	Σ 2624. *np.*
			38,64	24,86	46,22			20 . 9 . 24,84	− 4,51	α² Capricorni.
			58,44					20 . 59 . 44,65	− 3,87	Σ 2757. *f.*
			35,50	21,73	46,23			21 . 23 . 21,72	− 4,28	β Aquarii.
			33,25					21 . 37 . 19,48		Juno.
			13,24			0,43	46,27	15 . 38 . 59,79	− 3,03	β Serpentis.
			24,28	10,91	46,63			16 . 6 . 10,84	− 3,51	δ Ophiuchi.
			4,97	51,64	46,67			16 . 19 . 51,53	− 4,15	Antares.
			7,38					16 . 30 . 53,95		Mars 1 L.
			46,38	32,91	46,53			17 . 7 . 32,96	− 3,46	α Herculis.
			46,90					17 . 13 . 33,48	− 4,55	y Ophiuchi.
			55,96	42,60	46,64			17 . 27 . 42,54	− 3,58	α Ophiuchi.
			11,44	58,02	46,58			18 . 22 . 58,04	− 0,50	δ Ursæ Minoris.
			2,76					18 . 37 . 49,36	− 3,97	Σ 2375. *np.*
			18,92					18 . 58 . 5,53	− 3,53	Σ 2448.
			12,91					19 . 5 . 59,52	− 4,87	ψ Sagittarii.

Aug. 2. 23h, the Transit was levelled.

5

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Aug. 2	(a) Σ 2525..........	42,3	57,3	12,3	27,6	43,0	58,1	19 . 20 . 13,2		19 . 19 . 27,69	C.
	(b) α Aquilæ........	......	......	11,2	24,7	38,5	52,1	19 . 43 . 5,6	− 13,60	19 . 42 . 24,82	C.
	Σ 2600. *sp*.......	1,4	16,2	30,5	45,1	0,0	14,2	19 . 48 . 29,1		19 . 47 . 45,22	C.
	α^2 Capricorni.....	56,6	10,5	24,2	38,3	52,0	5,8	20 . 9 . 19,6		20 . 8 . 38,15	C.
	β Aquarii........	54,4	8,0	21,4	35,1	48,6	2,0	21 . 23 . 15,7		21 . 22 . 35,03	C.
	Juno............	9,0	22,4	35,7	49,5	3,0	16,4	21 . 36 . 30,0		21 . 35 . 49,43	C.
	(c) δ Ursæ Minoris SP.	10.48,8	14.35,5	18.23,0	22. 9,2	25.59,6	29.43,0	6 . 33 . 31,0		6 . 22 . 10,01	C.
	Castor. *nf*........	1,7	17,7	33,5	49,5	5,4	21,3	7 . 24 . 37,3		7 . 23 . 49,49	C.
Aug. 3	α Herculis.......	3,8	17,8	31,6	45,8	59,5	13,6	17 . 7 . 27,3		17 . 6 . 45,63	G.
Aug. 4	(d) ☉ 1 L...........	51,7	5,8	19,9	34,3	48,5	2,5	8 . 54 . 16,6		8 . 53 . 34,18	C.
	(d) ☉ 2 L...........	......	......	32,5	47,0	1,1	15,2	8 . 56 . 29,3	− 14,13	8 . 55 . 46,89	C.
	(e) δ Ursæ Minoris SP.	......	14.33,8	18.19,5	......	......	......	6.........	+ 5 . 40,77	6 . 22 . 7,42	C.
Aug. 5	(f) ☉ 1 L...........	42,5	56,7	10,5	24,9	39,0	53,2	8 . 58 . 7,1		8 . 57 . 24,84	C.
	(f) ☉ 2 L...........	54,8	9,1	23,2	37,5	51,4	5,6	9 . 0 . 19,7		8 . 59 . 37,33	C.
	(g) α Coronæ Borealis.	......	......	......	16,7	32,0	47,1	15 . 28 . 2,2	− 22,76	15 . 27 . 16,74	C.
	δ Ophiuchi.......	41,9	55,4	8,7	22,5	36,0	49,3	16 . 6 . 2,8		16 . 5 . 22,37	C.
	(h) Mars 1 L........	......	......	29,4	44,6	59,5	14,7	16 . 34 . 29,5	− 14,95	16 . 33 . 44,59	C.
	α Herculis........	2,6	16,6	30,5	44,6	58,4	12,3	17 . 7 . 26,2		17 . 6 . 44,46	C.
	(i) ☽ 1 L...........	54,5	10,1	24,8	40,6	5,8	11,0	17 . 13 . 26,4		17 . 12 . 40,45	C.
	α Ophiuchi.......	12,6	26,3	40,2	54,0	7,8	21,7	17 . 27 . 35,5		17 . 26 . 54,01	C.
	D Ophiuchi......	33,9	48,4	2,7	17,5	32,0	46,3	17 . 34 . 0,8		17 . 33 . 17,37	C.
	4 Sagittarii.......	4,3	19,1	13,5	28,4	43,2	58,0	17 . 50 . 12,7		17 . 49 . 28,46	C.
	(k) Σ 2296..........	2,6	16,1	29,3	43,1	56,7	10,1	18 . 7 . 23,6		18 . 6 . 43,07	C.
	(l) ⁎ N.P.D. 71°. 50′.	......	15,4	29,7	44,0	......	......	18 . 19	+ 14,19	18 . 19 . 43,89	C.
	δ Ursæ Minoris...	10.47,3	14.37,0	......	......	25.58,1	29.43,7	18 . 33 . 31,4	− 45,71	18 . 22 . 9,79	C.
	e Serpentis.......	25,7	39,2	52,4	6,1	19,7	33,1	18 . 23 . 46,6		18 . 23 . 6,11	C.
	α^2 Capricorni.....	54,6	8,3	22,2	36,2	50,1	4,0	20 . 9 . 17,7		20 . 8 . 36,16	C.
Aug. 7	α Coronæ Borealis.	30,0	45,2	0,1	15,6	30,6	45,8	15 . 28 . 0,9		15 . 27 . 15,46	C.
	β Serpentis.......	27,9	42,0	55,8	10,1	24,1	38,0	15 . 38 . 52,0		15 . 38 . 9,98	C.
	(m) δ Scorpii.........	33,9	48,6	2,9	17,7	32,2	46,7	15 . 51 . 1,2		15 . 50 . 17,60	C.
	δ Ophiuchi........	40,5	54,1	7,4	21,0	34,6	48,1	16 . 6 . 1,5		16 . 5 . 21,03	C.
	Antares..........	16,6	31,7	46,5	1,8	16,7	31,7	16 . 19 . 46,7		16 . 19 . 1,67	C.
	(n) τ Scorpii.........	35,5	50,7	6,0	21,5	36,8	52,1	16 . 26 . 7,3		16 . 25 . 21,41	C.
	(o) Mars 1 L........	38,6	53,6	8,6	23,7	38,6	53,5	16 . 37 . 8,6		16 . 36 . 23,60	C.
	(n) B.A.C. 5831......	2,1	17,2	31,6	46,3	1,5	16,0	17 . 8 . 30,7		17 . 7 . 46,49	C.
	(p) y Ophiuchi.......	58,0	13,3	28,1	43,6	59,0	14,2	17 . 13 . 29,5		17 . 12 . 43,67	C.
	α Ophiuchi.......	11,4	25,1	38,8	52,9	6,4	20,3	17 . 27 . 34,0		17 . 26 . 52,70	C.
	(q) ⁎ N.P.D. 48°. 16′.	56,0	15,3	33,1	50,7	9,5	27,1	17 . 46 . 46,0		17 . 45 . 51,10	C.
	g Sagittarii.......	43,0	58,1	13,2	28,5	43,7	58,8	18 . 8 . 13,8		18 . 7 . 28,45	C.
	(n) ⁎ N.P.D. 71°. 50′.	0,2	14,5	28,4	42,7	57,0	11,2	18 . 20 . 25,3		18 . 19 . 42,76	C.
	e Serpentis........	24,4	37,8	51,1	4,9	18,3	31,7	18 . 23 . 45,2		18 . 23 . 4,77	C.
	(r) ⁎ N.P.D. 38°. 23′.	21,1	43,0	4,5	26,2	48,0	9,8	18 . 30 . 31,3		18 . 29 . 26,27	C.
	σ Sagittarii.......	1,4	16,5	31,2	46,7	1,7	16,7	18 . 45 . 31,8		18 . 44 . 46,57	C.
	(s) o Sagittarii.......	47,5	2,1	16,5	31,2	45,6	0,2	18 . 55 . 14,7		18 . 54 . 31,11	C.
	(b) Σ 2449. *sf*.......	18,2	32,4	45,8	59,7	13,2	26,6	18 . 58 . 40,3		18 . 57 . 59,46	C.
	ψ Sagittarii......	24,5	39,7	54,5	9,6	24,3	39,2	19 . 5 . 54,2		19 . 5 . 9,43	C.
	(t) ☽ 1 L...........	0,4	15,3	30,2	45,2	59,8	14,8	19 . 13	+ 7,46	19 . 12 . 45,08	C.
	α Aquilæ.........	40,7	54,5	8,0	21,7	35,4	49,0	19 . 43 . 2,5		19 . 42 . 21,68	C.
	β Aquarii........	51,2	4,8	18,2	32,0	45,3	59,0	21 . 23 . 12,5		21 . 22 . 31,85	C.
	(u) Juno............	19,1	32,6	46,0	59,7	13,1	26,6	21 . 32 . 40,1		21 . 31 . 59,60	C.
Aug. 8	(x) ☉ 1 L...........	10,8	......	39,0	53,2	7,3	21,4	9 . 9 . 35,1	− 4,68	9 . 8 . 53,12	C.
	(x) ☉ 2 L...........	22,8	37,0	50,9	5,1	19,0	33,2	9 . 11 . 47,3		9 . 11 . 5,04	C.
	ε Bootis..........	34,1	49,3	4,4	20,0	35,1	50,2	14 . 38 . 5,5		14 . 37 . 19,80	C.
	β Aquilæ.........	9,0	22,5	36,0	49,6	3,2	16,7	19 . 47 . 30,2		19 . 46 . 49,60	C.
	(y) ☽ 1 L...........	35,8	50,7	5,0	......	......	......	20 . 8	+ 29,16	20 . 8 . 19,66	C.
Aug. 9	(z) β Aquilæ.........	8,4	22,1	35,2	49,0	2,5	16,0	19 . 47 . 29,5		19 . 46 . 48,96	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) The other star was too faint to take: See July 31. (*b*) Hurried. (*c*) Faint and unsteady at the last two wires. (*d*) Unsteady and cloudy. Wire III. of 1 L. was set down 20,9. (*e*) Clouds prevented taking more wires. (*f*) Unsteady. (*g*) Cloudy. (*h*) Very cloudy and unsteady,—quite doubtful. (*i*) Great vibration. (*k*) Seemed double. (*l*) A faint star and much clouded. One nearly equal north precedes. (*m*) Disturbed by noise in the Circle Room. (*n*) Faint. (*o*) Very unsteady. (*p*) A better observation than the next preceding. (*q*) A star of mag. 9,10, so faint that the observation is little better than guess. (*r*) Of nearly the 8th magnitude. (*s*) Disturbed by noise in the Circle Room. The four last wires have each been diminished 1s. (*t*) Heavily clouded,—very doubtful. (*u*) Good. (*x*) Cloudy. Rise of Temperature on the 8th. (*y*) Clouds came over. (*z*) A tremendous hail-storm occurred between 4 and 5 o'clock P.M. of this day.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,17	+ 0,39	+ 2,11	27,80			0,43	46,27	19 . 20 . 14,42	− 3,72	Σ 2525.
			24,95	11,51	46,56			19 . 43 . 11,57	− 4,07	α Aquilæ.
			45,33					19 . 48 . 31,95	− 3,86	Σ 2600. *sp.*
			38,30	24,87	46,57			20 . 9 . 24,93	− 4,52	α^2 Capricorni.
			35,17	21,74	46,57			21 . 23 . 21,82	− 4,29	β Aquarii.
			49,58					21 . 36 . 36,24		Juno.
			11,13	57,89	46,76	0,63	46,78	18 . 22 . 58,08	− 0,37	δ Ursæ Min. SP.
			49,59	36,64	47,05					Castor. *nf.*
			45,75	32,90	47,15					α Herculis.
		+ 2,72	40,67				47,41	8 . 55 . 28,31		☉'s center.
			8,99	57,30	48,31	0,61	47,95	18 . 22 . 57,10	+ 0,22	δ Ursæ Min. SP.
			31,23					8 . 59 . 19,41		☉'s center.
			16,87	5,26	48,39			15 . 28 . 5,21	− 2,72	α Coronæ Borealis.
			22,52	10,88	48,36			16 . 6 . 10,88	− 3,48	δ Ophiuchi.
			44,81					16 . 34 . 33,18		Mars 1 L.
			44,60	32,87	48,27			17 . 7 . 32,98	− 3,42	α Herculis.
			40,67					17 . 13 . 29,06		☽ 1 L.
			54,16	42,57	48,41			17 . 27 . 42,55	− 3,55	α Ophiuchi.
			17,58					17 . 34 . 5,98	− 4,40	D Ophiuchi.
			28,67					17 . 50 . 17,07	− 4,57	4 Sagittarii.
			43,24					18 . 7 . 31,65	− 4,05	Σ 2296.
			44,03					18 . 20 . 32,45	− 3,65	∗ N.P.D. 71°. 50′.
			8,54	57,15	48,61			18 . 22 . 56,96	+ 0,37	δ Ursæ Minoris.
			6,29					18 . 23 . 54,71	− 4,05	e Serpentis.
			36,35	24,88	48,53			20 . 9 . 24,81	− 4,53	α^2 Capricorni.
	+ 0,69	+ 3,04	15,62	5,23	49,61	0,63	49,20	15 . 28 . 5,23	− 2,69	α Coronæ Borealis.
			10,15					15 . 38 . 59,76	− 2,96	β Serpentis.
			17,83					15 . 51 . 7,45	− 3,78	δ Scorpii.
			21,21	10,85	49,64			16 . 6 . 10,83	− 3,45	δ Ophiuchi.
			1,91	51,58	49,67			16 . 19 . 51,54	− 4,09	Antares.
			21,66					16 . 26 . 11,29	− 4,19	τ Scorpii.
			23,84					16 . 37 . 13,48		Mars 1 L.
			46,73					17 . 8 . 36,38	− 4,33	B.A.C. 5831.
			43,92					17 . 13 . 33,57	− 4,51	*y* Ophiuchi.
			52,88	42,55	49,67			17 . 27 . 42,54	− 3,53	α Ophiuchi.
			51,23					17 . 46 . 40,90	− 3,04	∗ N.P.D. 48°. 16′.
			28,69					18 . 8 . 18,37	− 4,74	*g* Sagittarii.
			42,93					18 . 20 . 32,61	− 3,64	∗ N.P.D. 71°. 50′.
			4,97					18 . 23 . 54,65	− 4,04	*e* Serpentis.
			26,36					18 . 30 . 16,05	− 3,07	∗ N.P.D. 38°. 23′.
			46,81					18 . 45 . 36,50	− 4,85	σ Sagittarii.
			31,34					18 . 55 . 21,04	− 4,70	*o* Sagittarii.
			59,65					18 . 58 . 49,35	− 3,98	Σ 2449. *sf.*
			9,67					19 . 5 . 59,37	− 4,86	ψ Sagittarii.
			45,31					19 . 13 . 35,01		☽ 1 L.
			21,86	11,52	49,66			19 . 43 . 11,58	− 4,08	α Aquilæ.
			32,06	21,80	49,74			21 . 23 . 21,82	− 4,35	β Aquarii.
			59,81					21 . 32 . 49,57		Juno.
			59,25			0,66	49,91	9 . 10 . 49,41		☉'s center.
			19,95	10,29	50,34					ε Bootis.
			49,79	40,20	50,41					β Aquilæ.
			19,89					20 . 9 . 10,35		☽ 1 L.
			49,15	40,20	51,05	0,76	50,42			β Aquilæ.

Aug. 9. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Aug. 10	Mars 1 L.	56,1	11,1	26,0	41,2	56,2	.....	16.40.....	+14,98	16.40.41,10	G.
	α Ophiuchi	9,0	22,9	36,3	50,2	4,4	18,0	17.27.31,8		17.26.50,37	G.
	g Sagittarii	40,7	55,9	10,9	26,2	41,4	56,3	18. 8.11,6		18. 7.26,15	C.
	(a) δ Ursæ Minoris	10.43,2	14.32,5	18.15,3	.....	25.51,8	.....	18.33.26,0	+1.30,83	18.22. 4,59	C.
	e Serpentis	22,0	35,7	48,8	2,5	16,0	29,5	18.23.42,9		18.23. 2,48	C.
	⁎ N.P.D. 38°.23′.	.....	.....	1,8	24,0	45,5	7,2	18.30.29,0	−21,66	18.29.23,84	C.
	(b) Σ 2448.	23,9	40,7	57,1	13,7	30,2	46,5	18.58. 3,1		18.57.13,60	C.
	(c) ⁎ N.P.D. 62°.56′.	36,1	51,2	6,2	21,3	36,3	51,3	19.20. 6,2		19.19.21,23	C.
	(d) α Aquilæ	38,5	52,0	5,7	19,5	33,1	46,6	19.43. 0,2		19.42.19,38	C.
	(e) Σ 2600. sp.	56,1	10,7	25,1	40,0	54,3	9,1	19.48.23,5		19.47.39,82	C.
	α^2 Capricorni	51,3	5,2	18,7	32,6	46,4	0,4	20. 9.14,2		20. 8.32,68	C.
	β Aquarii	49,0	2,5	16,0	29,8	43,2	56,7	21.23.10,4		21.22.29,66	C.
	(e) Juno	54,0	7,5	21,0	34,3	47,8	1,5	21.30.15,1		21.29.34,46	C.
	(f) δ Capricorni	52,0	6,5	20,1	34,3	48,6	2,4	21.38.16,6		21.37.34,36	C.
	☽ 2 L.	16,8	31,0	44,6	59,0	12,8	26,7	21.52.40,6		21.51.58,79	C.
	α Aquarii	14,7	28,2	41,6	55,3	8,8	22,2	21.57.35,5		21.56.55,19	C.
	θ Aquarii	3,9	17,5	31,1	45,0	58,5	12,1	22. 8.25,8		22. 7.44,84	C.
	(f) ζ Aquarii. sf.	16,4	30,1	43,2	57,0	10,4	23,6	22.20.37,2		22.19.56,85	C.
	(f) δ Ursæ Minoris SP.	10.40,8	14.27,6	18.13,5	22. 0,3	25.50,2	29.35,4	6.33.22,8		6.22. 1,51	C.
	Castor	56,3	12,4	28,2	44,5	0,3	16,2	7.24.32,0		7.23.44,27	C.
	Procyon	33,5	47,2	0,4	14,3	27,9	41,4	7.30.55,0		7.30.14,24	C.
	(f) Pollux	6,0	21,4	36,2	51,7	7,1	22,3	7.35.37,8		7.34.51,78	C.
Aug. 11	(a) ☉ 1 L.	33,6	47,8	1,5	15,8	29,6	43,8	9.20.57,7		9.20.15,69	C.
	(a) ☉ 2 L.	45,2	59,0	13,0	27,4	41,0	55,1	9.23. 9,2		9.22.27,13	C.
	ε Bootis	32,0	47,1	2,3	17,7	33,0	48,1	14.38. 3,4		14.37.17,66	C.
	α^2 Libræ	.....	54,6	8,5	22,7	36,7	50,6	14.42. 4,5	−6,98	14.41.22,62	C.
	β Bootis	18,0	35,7	53,3	11,7	29,5	47,1	14.56. 5,0		14.55.11,47	C.
	δ Scorpii	31,0	45,7	0,0	14,8	29,1	43,7	15.50.58,2		15.50.14,64	C.
	δ Ophiuchi	37,6	51,2	4,6	18,3	31,7	45,2	16. 5.58,7		16. 5.18,19	C.
	(g) Antares	13,7	29,0	43,5	58,9	13,9	28,7	16.19.43,8		16.18.58,79	C.
	τ Scorpii	32,8	48,1	3,2	18,6	33,6	49,0	16.26. 4,3		16.25.18,52	C.
	Mars 1 L.	27,2	42,4	57,2	12,3	27,4	42,4	16.42.57,2		16.42.12,30	C.
	g Sagittarii	40,2	55,3	10,2	25,6	40,8	56,0	18. 8.11,1		18. 7.25,60	C.
	(h) δ Ursæ Minoris	10.42,0	14.30,8	18.15,0	22. 5,2	25.51,4	29.37,6	18.33.24,8		18.22. 3,83	C.
	Σ 2449. sf.	16,1	29,7	43,1	56,6	10,4	23,7	18.58.37,5		18.57.56,73	C.
	(i) ⁎ N.P.D. 62°.56′.	34,4	50,2	5,5	21,1	36,2	51,1	19.20. 6,1		19.19.20,65	C.
	α Aquilæ	37,8	51,6	5,2	19,0	32,5	45,9	19.42.59,6		19.42.18,80	C.
	Σ 2600. sp.	55,4	10,2	24,6	39,2	53,7	8,1	19.48.22,9		19.47.39,16	C.
	α^2 Capricorni	50,5	4,5	18,1	32,2	46,0	59,9	20. 9.13,6		20. 8.32,11	C.
	β Aquarii	48,4	2,0	15,4	29,2	42,6	56,0	21.23. 9,7		21.22.29,05	C.
	(e) Juno	5,0	18,6	31,9	45,5	59,0	12,3	21.29.25,9		21.28.45,46	C.
	δ Capricorni	51,6	5,7	19,5	33,6	48,0	2,1	21.38.16,1		21.37.33,80	C.
	α Aquarii	14,2	27,7	41,1	54,6	8,1	21,5	21.57.35,0		21.56.54,60	C.
	θ Aquarii	3,2	17,1	30,6	44,4	58,0	11,5	22. 8.25,1		22. 7.44,27	C.
	ζ Aquarii. sf.	15,8	29,3	42,6	56,4	9,7	23,2	22.20.36,3		22.19.56,19	C.
	η Aquarii	48,3	1,8	15,1	28,8	42,1	55,7	22.27. 9,2		22.26.28,72	C.
	☽ 2 L	23,1	37,0	50,5	4,5	18,3	32,0	22.39.45,9		22.39. 4,47	C.
	β Piscium	24,2	37,6	51,0	4,6	18,2	31,7	22.55.45,2		22.55. 4,64	C.
	(g) γ Piscium	32,1	46,2	59,4	13,1	26,4	40,0	23. 8.53,5		23. 8.12,96	C.
	(k) δ Ursæ Minoris SP.	10.38,6	14.26,4	18.13,2	21.59,5	25.50,0	29.34,3	6.33.21,5		6.22. 0,50	C.
	(l) Castor	.....	12,1	27,5	43,8	59,6	15,4	7.24.31,4	−7,96	7.23.43,67	C.
	(l) Pollux	5,3	20,4	35,6	51,2	.....	.....	7.35.37,2	+9,20	7.34.51,14	C.
Aug. 12	(m) ☉ 1 L.	.....	.....	48,4	2,5	16,3	30,2	9.24.44,2	−13,97	9.24. 2,35	C.
	(n) ☉ 2 L.	31,4	45,3	59,3	13,6	27,7	41,4	9.26.55,5		9.26.13,46	C.
	Arcturus	56,2	10,6	24,7	39,4	53,7	8,0	14. 8.22,4		14. 7.39,29	C.
	Antares	13,1	28,2	43,0	58,3	13,2	28,1	16.19.43,2		16.18.58,16	C.
	(o) τ Scorpii	32,2	47,3	2,4	18,1	33,1	48,2	16.26. 3,7		16.25.17,86	C.
	Mars 1 L.	0,6	15,6	30,4	45,5	0,6	15,7	16.44.30,7		16.43.45,59	C.
	α Herculis	57,7	11,8	25,5	39,6	53,5	7,4	17. 7.21,2		17. 6.39,53	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Unsteady. (b) Seen double: the two stars are of nearly the same R.A. (c) A star of the 9th magnitude: extremely faint on account of moon-light. Wire III. was set down 5,2. (d) Blazing. (e) Faint. (f) Very unsteady. Extraordinary motion of the stars this night. (g) Not good. (h) Remarkably steady. (i) Extremely faint and difficult: not brighter than magnitude 9, 10. (k) Wire VI. doubtful. (l) Cloudy: the second star extremely unsteady. (m) Hurried. Wire III. was set down 11,4, not being taken from the clock. Before wire IV. the counting was corrected. (n) Both Limbs badly defined. (o) Very faint and doubtful.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,17	+ 0,69	+ 3,04	41,34			0,62	51,46	16 . 41 . 33,23		Mars 1 L.
			50,55	42,52	51,97			17 . 27 . 42,46	– 3,50	α Ophiuchi.
			26,39					18 . 8 . 18,32	– 4,72	g Sagittarii.
			3,42	55,54	52,12			18 . 22 . 55,35	+ 1,98	δ Ursæ Minoris.
			2,68					18 . 23 . 54,61	– 4,02	e Serpentis.
			23,93					18 . 30 . 15,87	– 3,02	⁎ N.P.D. 38°. 23′.
			13,73					18 . 58 . 5,68	– 3,46	Σ 2448.
			21,39					19 . 20 . 13,35	– 3,68	⁎ N.P.D. 62°. 56′.
			19,56	11,52	51,96			19 . 43 . 11,53	– 4,08	α Aquilæ.
			39,98					19 . 48 . 31,95	– 3,85	Σ 2600. *sp.*
			32,90	24,90	52,00			20 . 9 . 24,88	– 4,55	α^2 Capricorni.
			29,87	21,83	51,96			21 . 23 . 21,88	– 4,38	β Aquarii.
			34,67					21 . 30 . 26,68		Juno.
			34,59					21 . 38 . 26,61	– 4,56	δ Capricorni.
			59,00					21 . 52 . 51,03		☽ 2 L.
			55,39	47,40	52,01			21 . 57 . 47,42	– 4,26	α Aquarii.
			45,05					22 . 8 . 37,08	– 4,33	θ Aquarii.
			57,05					22 . 20 . 49,09	– 4,22	ζ Aquarii. *sf.*
			3,07	55,39	52,32	0,63	52,07	18 . 22 . 55,31	+ 2,13	δ Ursæ Min. SP.
			44,41	36,81	52,40			7 . 24 . 36,67	– 2,36	Castor.
			14,43	6,74	52,31			7 . 31 . 6,70	– 1,89	Procyon.
			51,93	44,26	52,33			7 . 35 . 44,20	– 2,25	Pollux.
			21,59					9 . 22 . 13,91		☉'s center.
			17,81	10,24	52,43			14 . 38 . 10,26	– 2,40	ε Bootis.
			22,84	15,32	52,48			14 . 42 . 15,30	– 3,10	α^2 Libræ.
			11,59					14 . 56 . 4,05	– 2,16	β Bootis.
			14,87					15 . 51 . 7,36	– 3,73	δ Scorpii.
			18,37	10,80	52,43			16 . 6 . 10,86	– 3,40	δ Ophiuchi.
			59,03	51,53	52,50			16 . 19 . 51,53	– 4,04	Antares.
			18,77					16 . 26 . 11,27	– 4,14	τ Scorpii.
			12,54					16 . 43 . 5,05		Mars 1 L.
			25,84					18 . 8 . 18,39	– 4,71	g Sagittarii.
			2,66	55,25	52,59			18 . 22 . 55,21	+ 2,27	δ Ursæ Minoris.
			56,92					18 . 58 . 49,49	– 3,96	Σ 2449. *sf.*
			20,81					19 . 20 . 13,39	– 3,68	⁎ N.P.D. 62°. 56′.
			18,98	11,51	52,53			19 . 43 . 11,57	– 4,07	α Aquilæ.
			39,32					19 . 48 . 31,91	– 3,85	Σ 2600. *sp.*
			32,33	24,90	52,57			20 . 9 . 24,93	– 4,55	α^2 Capricorni.
			29,26	21,83	52,57			21 . 23 . 21,89	– 4,38	β Aquarii.
			45,67					21 . 29 . 38,30		Juno.
			34,03					21 . 38 . 26,67	– 4,57	δ Capricorni.
			54,80	47,41	52,61			21 . 57 . 47,45	– 4,27	α Aquarii.
			44,48					22 . 8 . 37,13	– 4,35	θ Aquarii.
			56,39					22 . 20 . 49,05	– 4,24	ζ Aquarii. *sf.*
			28,92					22 . 27 . 21,58	– 4,23	η Aquarii.
			4,68					22 . 39 . 57,35		☽ 2 L.
			4,83					22 . 55 . 57,50	– 4,13	β Piscium.
			13,15					23 . 9 . 5,83	– 4,15	γ Piscium.
			2,06	55,10	53,04	0,64	52,71	18 . 22 . 54,94	+ 2,42	δ Ursæ Min. SP.
			43,81	36,84	53,03			7 . 24 . 36,72	– 2,39	Castor.
			51,29	44,28	52,99			7 . 35 . 44,20	– 2,27	Pollux.
			8,09					9 . 26 . 1,05		☉'s center.
			39,46	32,54	53,08			14 . 8 . 32,55	– 2,35	Arcturus.
			58,40	51,51	53,11			16 . 19 . 51,54	– 4,02	Antares.
			18,11					16 . 26 . 11,26	– 4,12	τ Scorpii.
			45,83					16 . 44 . 38,99		Mars 1 L.
			39,71	32,79	53,08			17 . 7 . 32,88	– 3,34	α Herculis.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Aug. 12	(a) γ Ophiuchi	......	......	24,9	40,3	55,4	10,6	17.13.26,0	− 15,23	17.12.40,21	C.
	δ Ursæ Minoris	10.41,0	14.28,8	18.12,6	22. 1,8	25.51,0	29.37,2	18.33.24,9		18.22. 2,47	C.
	(a) ⁎ N.P.D. 62°. 56′.	34,7	49,3	4,1	20,0	34,6	49,8	19.20. 5,2		19.19.19,68	C.
	(b) ⁎ N.P.D. 67°. 49′.	55,3	10,1	24,6	39,2	54,1	8,1	19.47.22,9		19.46.39,19	C.
	α^2 Capricorni	50,0	3,9	17,3	31,5	45,2	59,2	20. 9.13,0		20. 8.31,44	C.
	β Aquarii	47,7	1,4	14,7	28,5	42,0	55,4	21.23. 9,1		21.22.28,40	C.
	Juno	15,4	29,1	42,5	56,1	9,6	23,0	21.28.36,4		21.27.56,01	C.
Aug. 14	(c) ☉ 1 L.	51,6	5,7	19,4	33,7	47,5	1,4	9.32.15,3		9.31.33,51	C.
	(c) ☉ 2 L.	2,7	16,5	30,3	44,5	58,4	12,4	9.34.26,4		9.33.44,46	C.
	Arcturus	54,9	9,4	23,5	37,9	52,4	6,7	14. 8.21,0		14. 7.37,97	C.
	(d) ζ Ursæ Minoris	45.33,0	46.39,7	47.45,0	48.52,2	49.58,6	51. 4,8	15.52.11,0		15.48.52,04	C.
	Antares	11,7	27,0	41,6	57,0	11,8	26,9	16.19.41,7		16.18.56,82	C.
	(e) τ Scorpii	......	46,1	1,0	16,5	32,0	47,1	16.26. 2,2	− 7,61	16.25.16,54	C.
	Mars 1 L.	14,6	29,5	44,4	59,7	14,7	29,6	16.47.44,6		16.46.59,59	C.
	α Herculis	56,4	10,2	24,2	38,3	52,2	6,1	17. 7.20,0		17. 6.38,20	C.
	(f) γ Ophiuchi	53,0	8,3	23,4	39,0	54,2	9,2	17.13.24,5		17.12.38,80	C.
	(g) ⁎ N.P.D. 54°. 27′.	49,1	5,7	22,1	39,0	55,6	12,1	18.58.28,7		18.57.38,90	C.
	(h) α Aquilæ	36,0	49,6	3,1	17,0	30,6	44,1	19.42.57,7		19.42.16,87	C.
	⁎ N.P.D. 67°. 49′.	54,2	9,0	23,3	38,1	52,7	7,2	19.47.21,6		19.46.38,02	C.
	α^2 Capricorni	48,6	2,6	16,4	30,2	44,0	57,9	20. 9.11,8		20. 8.30,21	C.
	(i) β Aquarii	46,5	0,2	13,6	27,2	41,0	54,3	21.23. 7,7		21.22.27,22	C.
	Juno	36,1	49,6	3,0	16,7	30,2	43,6	21.26.57,1		21.26.16,62	C.
Aug. 15	Mars 1 L.	54,9	10,0	24,7	40,0	55,1	......	16.48.....	+ 15,00	16.48.39,94	G.
	α Herculis	55,8	9,8	23,4	37,6	51,3	5,4	17. 7.19,2		17. 6.37,50	G.
	α Ophiuchi	5,7	19,5	33,0	47,1	1,0	14,6	17.27.28,4		17.26.47,04	G.
Aug. 16	Antares	10,4	25,5	40,2	55,6	10,6	25,5	16.19.40,6		16.18.55,49	C.
	α Herculis	55,1	9,0	22,8	37,0	50,8	4,7	17. 7.18,7		17. 6.36,87	C.
	α Aquilæ	34,6	48,4	1,7	15,5	29,1	42,7	19.42.56,3		19.42.15,47	C.
	(k) ⁎ N.P.D. 67°. 59′.	21,8	36,3	50,7	5,5	20,0	34,5	19.47.49,1		19.47. 5,42	C.
	α^2 Capricorni	47,2	1,2	14,9	29,0	42,6	56,6	20. 9.10,4		20. 8.28,85	C.
	(l) Σ 2665.	28,5	42,7	46,6	10,4	24,2	38,1	20.11.52,0		20.11.10,35	C.
	Σ 2708. *sf.*	0,6	17,8	34,8	52,2	9,1	26,2	20.32.43,3		20.31.52,00	C.
	(m) Σ 2750. *f.*	58,3	12,2	26,0	40,0	53,9	7,2	20.57.21,1		20.56.39,81	C.
	Juno	55,6	9,3	22,8	36,4	50,1	3,3	21.25.17,0		21.24.36,36	C.
Aug. 17	☉ 1 L.	4,6	18,7	32,3	46,3	0,2	14,2	9.43.28,0		9.42.46,33	C.
	☉ 2 L.	15,2	29,0	42,9	57,1	10,8	24,7	9.45.38,6		9.44.56,90	C.
	(n) α Coronæ Borealis.	22,6	38,2	53,1	8,5	23,6	38,8	15.27.54,0		15.27. 8,40	C.
	α Serpentis	58,0	11,6	25,1	38,8	52,3	6,0	15.36.19,5		15.35.38,76	C.
	Antares	9,5	24,8	39,5	54,9	9,9	24,8	16.19.39,8		16.18.54,74	C.
	Mars 1 L.	22,5	37,7	52,4	7,8	22,7	37,6	16.52.52,8		16.52. 7,65	C.
	α^2 Capricorni	46,3	0,7	14,1	28,2	42,0	55,7	20. 9. 9,7		20. 8.28,10	C.
	Juno	5,7	19,3	32,6	46,4	59,9	......	21.23.....	+ 13,49	21.23.46,27	G.
Aug. 18	(o) ☉ 1 L.	47,8	1,6	15,4	29,5	43,6	56,8	9.47.11,0		9.46.29,39	C.
	☉ 2 L.	58,2	12,3	26,0	40,0	53,9	7,8	9.49.21,8		9.48.40,00	C.
	(p) Spica	19,6	[illegible]	47,0	0,8	14,6	28,2	13.16.41,9		13.16. 0,78	C.
	Arcturus	52,0	6,3	20,4	35,0	49,4	3,5	14. 8.18,1		14. 7.34,96	C.
	β Bootis	12,8	30,9	48,3	6,4	24,4	42,1	14.56. 0,0		14.55. 6,42	C.
	δ Ophiuchi	32,7	46,2	59,5	13,3	26,6	40,3	16. 5.53,7		16. 5.13,18	C.
	Antares	8,8	23,9	38,7	53,8	9,0	23,9	16.19.39,0		16.18.53,87	C.
	(q) Mars 1 L.	9,3	24,3	39,3	54,6	9,8	24,6	16.54.39,7		16.53.54,51	C. G.
	α Ophiuchi	3,5	17,4	31,1	44,9	58,6	12,4	17.27.26,3		17.26.44,89	C.
	(r) Σ 2278.	58,7	23,1	47,2	12,1	36,3	0,6	18. 0.25,1		17.59.11,87	C.
	δ Ursæ Minoris	10.33,7	14.21,4	18. 5,1	21.56,0	25.43,2	29.30,3	18.33.16,5		18.21.55,17	C.
	(s) Σ 2402.	45,5	59,3	12,9	26,7	40,3	54,0	18.42. 7,8		18.41.26,64	C.
	(t) ⁎ N.P.D. 54°. 27′.	46,2	2,7	19,1	36,1	52,5	9,1	18.58.25,6		18.57.35,90	C.
	α Aquilæ	33,0	46,6	0,1	14,0	27,5	41,1	19.42.54,7		19.42.13,86	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Extremely uncertain, so faint. (b) The preceding of three stars the last of which is Σ 2600. (c) Very tremulous. (d) Steady. (e) Faint. Wire IV. was set down 17,5. (f) Much brighter than on Aug. 12. (g) Follows Σ 2448 and is of nearly the same magnitude. (h) Blazing. (i) Flaring: not well observed. (k) Mag. 7, 8. (l) Wire I. hurried. Not seen double. An equal star precedes. (m) Not good: rather faint. (n) Confused at Wire I. (o) So much stray light that the wires (particularly wire I.) were scarcely visible. I found one of the reefs down. (p) Wire VII. was written down 40,9. (q) The first five wires by G and the last two by C, who came too late. (r) The first of three. (s) An equal star of 3′ or 4′ greater N.P.D. followed 16s. (t) North following Σ 2448.

Error of Collima-tion.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock ap-parently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,17	+ 0,69	+ 3,04	40,46			0,64	52,71	17 . 13 . 33,63	- 4,45	γ Ophiuchi.
			1,30	54,95	53,65			18 . 22 . 54,50	+ 2,57	δ Ursæ Minoris.
			19,84					19 . 20 . 13,07	- 3,67	⁎ N.P.D. 62°. 56′.
			39,35					19 . 47 . 32,59	- 3,84	⁎ N.P.D. 67°. 49′.
			31,66	24,90	53,24			20 . 9 . 24,91	- 4,55	α^2 Capricorni.
			28,61	21,84	53,23			21 . 23 . 21,89	- 4,39	β Aquarii.
			56,22					21 . 28 . 49,50		Juno.
	+ 0,24		39,14			0,67	53,93	9 . 33 . 33,34		☉'s center.
			38,11	32,51	54,40			14 . 8 . 32,43	- 2,32	Arcturus.
			51,74					15 . 49 . 46,11	+ 1,34	ζ Ursæ Minoris.
			57,05	51,48	54,43			16 . 19 . 51,44	- 3,99	Antares.
			16,78					16 . 26 . 11,17	- 4,10	τ Scorpii.
			59,82					16 . 47 . 54,22		Mars 1 L.
			38,35	32,76	54,41			17 . 7 . 32,76	- 3,31	α Herculis.
			39,04					17 . 13 . 33,45	- 4,42	γ Ophiuchi.
			39,00					18 . 58 . 33,46	- 3,42	⁎ N.P.D. 54°. 27′.
			17,03	11,50	54,47			19 . 43 . 11,51	- 4,06	α Aquilæ.
			38,15					19 . 47 . 32,63	- 3,83	⁎ N.P.D. 67°. 49′.
			30,42	24,90	54,48			20 . 9 . 24,91	- 4,55	α^2 Capricorni.
			27,42	21,86	54,44			21 . 23 . 21,95	- 4,41	β Aquarii.
			16,81					21 . 27 . 11,34		Juno.
		+ 1,43	40,05			0,72	54,73	16 . 49 . 35,28		Mars 1 L.
			37,58	32,75	55,17					α Herculis.
			47,12	42,45	55,33					α Ophiuchi.
			55,60	51,45	55,85	0,68	55,36	16 . 19 . 51,42	- 3,96	Antares.
			36,95	32,73	55,78			17 . 7 . 32,79	- 3,28	α Herculis.
			15,56	11,50	55,94			19 . 43 . 11,48	- 4,06	α Aquilæ.
			5,49					19 . 48 . 1,41	- 3,83	⁎ N.P.D. 67°. 59′.
			28,96	24,90	55,94			20 . 9 . 24,89	- 4,55	α^2 Capricorni.
			10,43					20 . 12 . 6,36	- 4,02	Σ 2665.
			52,06					20 . 32 . 48,00	- 3,81	Σ 2708. *sf.*
			39,89					20 . 57 . 35,84	- 4,14	Σ 2750. *f.*
			36,46					21 . 25 . 32,43		Juno.
			51,70			0,82	56,02	9 . 44 . 48,05		☉'s center.
			8,48	5,06	56,58			15 . 28 . 5,03	- 2,52	α Coronæ Borealis.
			38,85	35,38	36,53			15 . 36 . 35,40	- 2,97	α Serpentis.
			54,85	51,44	56,59			16 . 19 . 51,43	- 3,95	Antares.
			7,76					16 . 53 . 4,36		Mars 1 L.
			28,21	24,90	56,69			20 . 9 . 24,92	- 4,55	α^2 Capricorni.
			46,37					21 . 24 . 43,12		Juno.
			34,78			0,85	56,87	9 . 48 . 32,00		☉'s center.
			0,89	58,28	57,39			13 . 16 . 58,23	- 2,41	Spica.
			35,03	32,45	57,42			14 . 8 . 32,40	- 2,26	Arcturus.
			6,48					14 . 56 . 3,88	- 1,97	β Bootis.
			13,26	10,71	57,45			16 . 6 . 10,70	- 3,31	δ Ophiuchi.
			53,98	51,42	57,44			16 . 19 . 51,43	- 3,93	Antares.
			54,62					16 . 54 . 52,09		Mars 1 L.
			44,97	42,41	57,44			17 . 27 . 42,46	- 3,39	α Ophiuchi.
			11,91					18 . 0 . 9,42	- 2,45	Σ 2278.
			54,59	53,07	58,48			18 . 22 . 52,11	+ 4,45	δ Ursæ Minoris.
			26,72					18 . 42 . 24,25	- 3,78	Σ 2402.
			35,96					18 . 58 . 33,50	- 3,37	⁎ N.P.D. 54°. 27′.
			13,95	11,49	57,54			19 . 43 . 11,52	- 4,05	α Aquilæ.

Aug. 18. 6h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Aug. 18	(a) ⁎ N.P.D. 67°. 59′.	20,2	35,0	49,1	3,9	18,3	33,0	19 . 47 . 47,6		19 . 47 . 3,87	C.
	Σ 2611. sp.	13,5	33,7	53,0	12,9	32,7	52,3	19 . 54 . 12,1		19 . 53 . 12,89	C.
	(b) Σ 2651. np.	57,3	11,2	25,0	39,3	53,2	7,2	20 . 6 . 21,3		20 . 5 . 39,22	C.
	(c) α^2 Capricorni	......	59,7	13,3	27,2	41,1	54,9	20 . 9 . 8,8	−6,91	20 . 8 . 27,26	C.
	(d) Juno	15,7	29,0	42,3	56,1	9,6	23,1	21 . 23 . 36,6		21 . 22 . 56,06	C.
	(e) η Tauri	31,2	46,0	0,2	15,1	30,2	44,7	3 . 37 . 59,5		3 . 37 . 15,27	C.
	(f) ☽ 2 L.	47,9	3,1	18,0	33,2	48,2	3,3	4 . 18 . 18,3		4 . 17 . 33,14	C.
	Aldebaran	18,1	32,3	46,2	0,4	14,3	28,4	4 . 26 . 42,3		4 . 26 . 0,28	C.
	(g) τ Tauri	11,1	25,9	40,3	55,1	9,7	24,2	4 . 32 . 39,0		4 . 31 . 55,04	C.
	(g) ι Tauri	4,6	19,2	33,3	......	2,5	17,1	4 . 53 . 31,3	+0,01	4 . 52 . 48,01	C.
	Rigel	23,2	36,9	50,3	4,2	17,7	31,3	5 . 6 . 45,0		5 . 6 . 4,09	C.
	β Tauri	41,3	56,9	12,0	27,4	42,9	58,1	5 . 16 . 13,4		5 . 15 . 27,43	C.
	(h) δ Ursæ Minoris SP.	10.33,3	14.20,6	18. 6,5	21.53,0	25.42,6	29.26,0	6 . 33 . 15,8		6 . 21 . 53,97	C.
	(i) Castor	51,2	7,0	22,7	39,1	54,9	10,4	7 . 24 . 26,5		7 . 23 . 38,83	C.
	(e) Procyon	28,2	41,9	55,3	8,9	22,3	36,0	7 . 30 . 49,4		7 . 30 . 8,86	C.
	(e) Pollux	0,3	15,8	30,8	46,3	1,4	17,0	7 . 35 . 32,4		7 . 34 . 46,29	C.
Aug. 19	☉ 1 L.	30,6	44,7	58,4	12,3	26,1	39,7	9 . 50 . 53,8		9 . 50 . 12,23	C.
	☉ 2 L.	41,0	54,8	8,5	22,4	36,2	50,3	9 . 53 . 4,2		9 . 52 . 22,48	C.
	(k) Arcturus	51,1	5,5	19,6	34,2	48,3	3,0	14 . 8 . 17,2		14 . 7 . 34,13	C.
	ζ Ursæ Minoris	45.28,7	46.35,2	47.41,0	48.48,2	49.54,3	51. 0,5	15 . 52 . 6,7		15 . 48 . 47,80	C.
	δ Ophiuchi	32,0	45,4	58,9	12,6	26,0	39,5	16 . 5 . 53,0		16 . 5 . 12,48	C.
	Antares	8,0	23,2	37,8	53,1	8,1	23,0	16 . 19 . 38,1		16 . 18 . 53,04	C.
	(l) Σ 2278	58,1	22,5	46,5	11,2	35,5	0,0	18 . 0 . 24,2		17 . 59 . 11,14	C.
	δ Ursæ Minoris	10.34,0	14.21,9	18. 5,8	21.56,5	25.43,3	29.29,2	18 . 33 . 17,2		18 . 21 . 55,41	C.
	(m) ⁎ N.P.D. 79°. 34′.	0,4	14,2	28,0	41,6	55,2	9,0	18 . 42 . 22,8		18 . 41 . 41,60	C.
	⁎ N.P.D. 54°. 27′.	45,2	2,0	18,4	35,1	51,7	8,3	18 . 58 . 24,9		18 . 57 . 35,09	C.
	(n) α^2 Capricorni	45,0	59,0	12,4	26,6	40,4	54,1	20 . 9 . 8,0		20 . 8 . 26,50	C.
	Juno	25,4	39,0	52,4	6,0	19,6	33,0	21 . 22 . 46,7		21 . 22 . 6,01	C.
Aug. 20	☽ 2 L.	56,6	11,7	26,4	41,8	56,6	11,7	6 . 12 . 26,9		6 . 11 . 41,67	C.
	ε Geminorum	34,9	49,8	4,5	19,6	34,5	49,4	6 . 34 . 4,2		6 . 33 . 19,56	C.
	(o) Sirius	34,0	48,2	2,0	16,3	30,3	44,4	6 . 37 . 58,4		6 . 37 . 16,23	C.
	Castor	49,9	5,8	21,5	37,8	53,5	9,3	7 . 24 . 25,2		7 . 23 . 37,57	C.
	(e) Procyon	26,9	40,5	54,0	7,6	21,1	34,5	7 . 30 . 48,0		7 . 30 . 7,52	C.
	Pollux	59,2	14,5	29,7	45,1	0,5	15,6	7 . 35 . 30,8		7 . 34 . 45,06	C.
Aug. 21	(p) ☉ 1 L.	54,8	......	......	36,4	50,4	4,2	9 . 58 . 17,8	−8,31	9 . 57 . 36,41	C.
	(p) ☉ 2 L.	4,6	18,7	32,6	46,4	0,3	14,1	10 . 0 . 28,0		9 . 59 . 46,39	C.
	(q) ε Bootis	24,9	40,2	55,1	10,6	25,9	41,0	14 . 37 . 56,1		14 . 37 . 10,54	C.
	(r) Antares	......	21,8	36,6	51,8	6,8	21,4	16 . 19 . 36,4	−7,50	16 . 18 . 51,63	C.
	Mars 1 L.	43,3	58,6	13,5	28,8	43,6	58,6	17 . 0 . 13,6		16 . 59 . 28,57	C.
	α Herculis	51,3	5,4	19,1	33,1	47,2	1,1	17 . 7 . 14,9		17 . 6 . 33,16	C.
	(s) Σ 2369	27,0	40,4	53,7	7,4	20,7	34,2	18 . 35 . 47,7		18 . 35 . 7,30	C.
	(r) β Aquarii	......	55,2	8,4	22,2	35,9	49,4	21 . 23 . 2,8	−6,78	21 . 22 . 22,20	C.
Aug. 22	(t) Σ 2408	57,1	10,6	24,3	38,1	51,7	5,7	18 . 44 . 19,2		18 . 43 . 38,10	C.
	(u) Σ 2437	22,1	36,2	50,6	5,0	19,1	33,3	18 . 54 . 47,5		18 . 54 . 4,83	C.
	Σ 2445. nf.	22,6	37,2	51,7	6,3	21,1	36,0	18 . 57 . 50,4		18 . 57 . 6,47	C.
	(x) 17 Lyræ	45,2	1,1	16,7	33,0	48,8	4,7	19 . 1 . 20,3		19 . 0 . 32,83	C.
	α Aquilæ	30,6	44,5	57,8	11,6	25,2	38,6	19 . 42 . 52,2		19 . 42 . 11,50	C.
	β Aquilæ	59,6	13,1	26,5	40,2	53,7	7,2	19 . 47 . 20,7		19 . 46 . 40,14	C.
	(y) Σ 2611. sp.	11,2	......	......	10,6	30,2	49,9	19 . 54 . 9,6	−11,86	19 . 53 . 10,44	C.
	(z) Σ 2651	......	9,1	22,8	37,3	51,0	......	20 . 6 . 19,1	−2,80	20 . 5 . 37,06	C.
	(aa) α^2 Capricorni	43,2	57,0	11,0	25,0	38,7	52,2	20 . 9 . 6,2		20 . 8 . 24,76	C.
	δ Ursæ Minoris SP.	10.28,7	14.14,5	18. 0,8	21.47,4	25.38,4	29.21,8	6 . 33 . 10,9		6 . 21 . 48,93	C.
	(bb) Castor	49,1	5,2	20,9	36,8	53,1	8,3	7 . 24	+7,97	7 . 23 . 36,87	C.
	(cc) Pollux	58,3	13,8	28,8	44,4	59,8	15,1	7 . 35 . 30,2		7 . 34 . 44,34	C.
Aug. 23	☉ 1 L.	18,1	31,8	45,4	59,5	13,2	26,8	10 . 5 . 40,7		10 . 4 . 59,36	C.
	☉ 2 L.	27,7	41,6	35,2	9,2	23,0	36,6	10 . 7 . 50,5		10 . 7 . 9,12	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Preceding Σ 2600. (b) Very close. (c) Hurried at first. (d) Counting 5ˢ in advance: altered accordingly. (e) Very unsteady. (f) Steady. (g) Faint. (h) Faint and unsteady. (i) Bad observation. (k) Wire VI. doubtful. (l) The brightest of three: the close double north follows. (m) The star following Σ 2402. (n) All the wires except I. and II. have been increased 1ˢ. (o) Very unsteady. The three last wires have been increased 1ˢ. (p) At some wires very cloudy and doubtful. The temperature was 10° lower than on the 19th. (q) Wire I. was set down 6,9, not being taken from the clock. (r) Hurried: not good. (s) Obscure from clouds. A fainter star north precedes. (t) Obscure and doubtful from clouds: not seen double. Wires V, VI, and VII, have been increased 10ˢ. (u) Observed as single. A brighter south follows. (x) Not seen double. A smaller star north precedes. Wire V. was set down 47,8. (y) Cloudy and obscure. (z) Very cloudy and doubtful. This is the most southern of four stars forming a kind of trapezium. (aa) Not good. (bb) Cloudy. (cc) Wire VII. doubtful.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,17	+ 0,24	+ 1,43	3,94			0,85	56,87	19 . 48 . 1,51	− 3,82	⁎ N.P.D. 67°. 59′.
			12,94					19 . 54 . 10,52	− 3,51	Σ 2611. *sp.*
			39,30					26 . 6 . 36,88	− 3,97	Σ 2651. *np.*
			27,37	24,90	57,53			20 . 9 . 24,95	− 4,55	α^2 Capricorni.
			56,16					21 . 23 . 53,79		Juno.
			15,35			0,77	57,74	3 . 38 . 13,21	− 3,50	η Tauri.
			33,22					4 . 18 . 31,10		☽ 2 L.
			0,36	58,22	57,86			4 . 26 . 58,24	− 3,10	Aldebaran.
			55,12					4 . 32 . 53,00	− 3,21	τ Tauri.
			48,08					4 . 53 . 45,98	− 3,08	ι Tauri.
			4,19	2,07	57,88			5 . 7 . 2,09	− 2,35	Rigel.
			27,50	25,44	57,94			5 . 16 . 25,41	− 3,14	β Tauri.
			54,72	52,89	58,17			18 . 22 . 52,66	+ 4,63	δ Ursæ Minoris.
			38,90	37,01	58,11			7 . 24 . 36,88	− 2,56	Castor.
			8,95	6,89	57,94			7 . 31 . 6,93	− 2,04	Procyon.
			46,36	44,44	58,08			7 . 35 . 44,34	− 2,43	Pollux.
			17,44					9 . 52 . 15,50		⨀'s center.
			34,20	32,44	58,24			14 . 8 . 32,39	− 2,25	Arcturus.
			47,73					15 . 49 . 45,98	+ 1,91	ζ Ursæ Minoris.
			12,56	10,70	58,14			16 . 6 . 10,82	− 3,30	δ Ophiuchi.
			53,15	51,41	58,26			16 . 19 . 51,41	− 3,92	Antares.
			11,18					18 . 0 . 9,50	− 2,42	Σ 2278.
			54,83	52,70	57,87			18 . 22 . 53,16	+ 4,82	δ Ursæ Minoris.
			41,69					18 . 42 . 40,03	− 3,77	⁎ N.P.D. 79°. 34′.
			35,15					18 . 58 . 33,50	− 3,35	⁎ N.P.D. 54°. 27′.
			26,61	24,90	58,29			20 . 9 . 25,00	− 4,55	α^2 Capricorni.
			6,11					21 . 23 . 4,54		Juno.
			41,75			0,40	59,22	6 . 12 . 41,07		☽ 2 L.
			19,64					6 . 34 . 18,97	− 2,72	ε Geminorum.
			16,34					6 . 38 . 15,67	− 1,73	Sirius.
			37,64	37,06	59,42			7 . 24 . 36,98	− 2,61	Castor.
			7,61	6,93	59,32			7 . 31 . 6,95	− 2,08	Procyon.
			45,13	44,48	59,35			7 . 35 . 44,48	− 2,47	Pollux.
+ 0,62			41,51					9 . 59 . 40,90		⨀'s center.
			10,65	10,07	59,42			14 . 38 . 10,11	− 2,23	ε Bootis.
			51,78	51,38	59,60			16 . 19 . 51,27	− 3,89	Antares.
			28,72					17 . 0 . 28,22		Mars 1 L.
			33,27	32,66	59,39			17 . 7 . 32,77	− 3,21	α Herculis.
			7,42					18 . 36 . 6,95	− 3,89	Σ 2369.
			22,33	21,89	59,56			21 . 23 . 21,91	− 4,44	β Aquarii.
	+ 0,02	+ 4,21	38,33			0,36	59,48	18 . 44 . 38,09	− 3,74	Σ 2408.
			5,03					18 . 55 . 4,79	− 3,62	Σ 2437.
			6,67					18 . 58 . 6,43	− 3,55	Σ 2445. *nf.*
			32,99					19 . 1 . 32,76	− 3,39	17 Lyræ.
			11,74	11,47	59,73			19 . 43 . 11,52	− 4,03	α Aquilæ.
			40,38	40,15	59,77			19 . 47 . 40,16	− 4,06	β Aquilæ.
			10,54					19 . 54 . 10,32	− 3,46	Σ 2611. *sp.*
			37,27					20 . 6 . 37,05	− 3,96	Σ 2651.
			25,06	24,89	59,83			20 . 9 . 24,84	− 4,54	α^2 Capricorni.
			51,40	51,35	59,95	0,50	59,89	18 . 22 . 51,42	+ 6,17	δ Ursæ Minoris.
			37,03	37,11	60,08					Castor.
			44,52	44,53	60,01					Pollux.
			4,47					10 . 7 . 4,57		⨀'s center.

The Error of Collimation used from Aug. 21 depends on a new determination of the distance of the middle wire from the mean of all the wires.

Aug. 24. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Aug. 24	(a) ζ Ursæ Minoris...	45.25,9	46.32,4	47.38,0	48.45,3	49.51,6	50.57,3	15 . 52 . 3,5		15 . 48 . 44,86	C.
	Mars 1 L..........	36,5	51,7	6,3	21,7	36,8	51,7	17 . 6 . 6,8		17 . 5 . 21,64	C.
	(b) α Ophiuchi........	0,2	14,0	27,5	41,4	55,2	9,1	17 . 27 . 23,0		17 . 26 . 41,48	C.
	δ Ursæ Minoris ...	10.30,7	14.18,8	18. 3,6	21.54,3	25.39,3	29.26,0	18 . 33 . 13,2		18 . 21 . 52,27	G
	Juno............	20,4	34,2	47,6	1,2	14,8	28,1	21 . 18 . 41,6		21 . 18 . 1,13	C.
	β Aquarii........	40,3	54,0	7,3	21,1	34,7	48,0	21 . 23 . 1,6		21 . 22 . 21,00	C.
	(c) Σ 2834............	33,0	47,2	1,2	15,8	30,0	44,1	21 . 43 . 58,2		21 . 43 . 15,64	C.
	α Aquarii.........	6,2	19,7	33,0	46,6	0,2	13,5	21 . 57 . 27,1		21 . 56 . 46,62	C.
Aug. 25	(d) Mars 1 L.........	......	53,3	8,1	23,5	38,6	53,5	17 . 8 . 8,6	− 7,53	17 . 7 . 23,40	C.
	(e) α Ophiuchi.......	59,5	13,3	27,0	41,1	55,0	8,3	17 . 27 . 22,2		17 . 26 . 40,91	C.
	α Aquilæ.........	29,1	42,8	56,2	10,0	23,7	37,0	19 . 42 . 50,8		19 . 42 . 9,94	G.
	(d) β Aquilæ.........	58,0	11,5	25,0	38,8	52,3	5,5	19 . 47 . 19,1		19 . 46 . 38,60	G.
Aug. 26	⊙ 1 L............	18,8	32,6	46,2	0,1	13,8	27,5	10 . 16 . 41,3		10 . 16 . 0,04	C.
	⊙ 2 L..	28,0	41,8	55,5	9,3	23,1	36,8	10 . 18 . 50,6		10 . 18 . 9,30	C.
	(f) Antares...........	4,1	......	34,0	49,2	4,0	19,0	16 . 19 . 34,1	− 4,99	16 . 18 . 49,08	C.
	(g) α Herculis........	58,7	3,0	16,5	30,7	44,6	58,5	17 . 7 . 12,3		17 . 6 . 30,61	C.
	Mars 1 L.........	41,5	56,4	11,4	26,8	41,8	......	17 . 9	+ 15,06	17 . 9 . 26,64	C.
	α Ophiuchi.......	58,6	12,5	26,2	40,3	54,0	7,9	17 . 27 . 21,4		17 . 26 . 40,12	C.
	(h) Juno.............	45,5	58,9	12,2	26,1	39,7	53,1	21 . 17 . 6,7		21 . 16 . 26,03	C.
	β Aquarii.........	39,2	52,6	6,1	19,7	33,4	46,8	21 . 23 . 0,4		21 . 22 . 19,75	C.
Aug. 29	Mars 1 L.........	2,9	17,8	32,8	48,5	3,4	18,3	17 . 16 . 33,4		17 . 15 . 48,16	C.
	α Ophiuchi.......	57,1	11,0	24,7	38,7	52,5	6,1	17 . 27 . 20,0		17 . 26 . 38,59	C.
Aug. 30	(d) ⊙ 1 L............	......	7,7	21,3	35,2	......	......	10 . 31 . 16,2	+ 0,01	10 . 30 . 35,11	C.
	⊙ 2 L............	3,1	16,6	30,3	44,2	58,1	11,5	10 . 33 . 25,2		10 . 32 . 44,14	C.
	(d) Arcturus..........	......	59,2	13,4	28,1	42,3	56,6	14 . 9 . 10,8	− 7,17	14 . 8 . 27,90	C.
	ε Bootis...........	20,0	35,3	50,4	5,7	21,0	36,1	14 . 38 . 51,2		14 . 38 . 5,67	C.
Aug. 31	☽ 1 L.............	36,3	51,7	6,7	22,2	37,4	52,5	15 . 53 . 7,7		15 . 52 . 22,07	C.
	δ Ophiuchi........	25,2	38,7	52,0	5,8	19,3	32,6	16 . 6 . 46,2		16 . 6 . 5,69	C.
	(i) σ Scorpii.........	53,4	8,2	23,0	38,1	52,9	7,7	16 . 12 . 22,7		16 . 11 . 38,00	C.
	Antares...........	1,3	16,4	31,1	46,4	1,4	16,2	16 . 20 . 31,2		16 . 19 . 46,29	C.
	α Herculis........	46,0	59,8	13,6	27,7	41,7	55,2	17 . 8 . 9,4		17 . 7 . 27,63	C.
	α Ophiuchi.......	55,8	9,8	23,3	37,3	51,1	4,9	17 . 28 . 18,7		17 . 27 . 37,27	C.
	(a) δ Ursæ Minoris...	......	......	18.55,2	22.46,2	26.32,5	30.18,1	18 . 34 . 4,9	− 3 . 46,08	18 . 22 . 45,30	C.
	(k) Σ 2400...........	8,7	23,1	36,9	51,1	5,2	19,1	18 . 42 . 33,0		18 . 41 . 51,01	C.
	(l) Σ 2408............	51,8	5,6	19,2	33,2	46,9	0,3	18 . 45 . 14,0		18 . 44 . 33,00	C.
	(m) ⁎ N.P.D. 71°. 6′...	20,2	34,3	48,5	3,1	17,3	31,2	18 . 55 . 45,7		18 . 55 . 2,90	C.
	α Aquilæ.........	25,5	39,3	52,5	6,5	20,0	33,6	19 . 43 . 47,2		19 . 43 . 6,37	C.
	β Aquilæ.........	54,6	8,1	21,5	35,3	48,7	2,1	19 . 48 . 15,7		19 . 47 . 35,14	C.
	Σ 2611. *sp*........	5,9	25,8	45,5	5,6	25,2	44,6	19 . 55 . 4,4		19 . 54 . 5,29	C.
	(n) Σ 2651...........	......	......	17,6	32,0	45,8	59,7	20 . 7 . 13,6	− 13,98	20 . 6 . 31,76	C.
Sept. 1	Arcturus..........	43,5	58,0	12,2	26,8	41,1	55,3	14 . 9 . 9,6		14 . 8 . 26,64	C.
	(o) δ Ophiuchi........	......	......	51,3	5,0	18,5	31,8	16 . 6 . 45,4	− 13,49	16 . 6 . 4,91	C.
	Antares...........	0,5	15,5	30,3	45,5	0,7	15,3	16 . 20 . 30,4		16 . 19 . 45,46	C.
	☽ 1 L.............	6,3	21,7	36,8	52,4	7,8	22,9	16 . 55 . 38,3		16 . 54 . 52,31	C.
	α Herculis........	45,1	59,0	12,8	27,0	40,9	54,8	17 . 8 . 8,7		17 . 7 . 26,90	C.
	(p) θ Ophiuchi........	35,8	51,0	......	......	......	50,3	17 . 13 . 5,3	− 0,01	17 . 12 . 20,59	C.
	Mars 1 L.........	39,8	55,0	9,8	25,3	40,2	55,3	17 . 24 . 10,5		17 . 23 . 25,13	C.
	α Ophiuchi.......	55,1	9,0	22,3	36,5	50,4	4,2	17 . 28 . 17,8		17 . 27 . 36,47	C.
	δ Ursæ Minoris...	11.22,2	15.10,4	18.54,8	22.46,0	26.31,7	30.17,7	18 . 34 . 5,0		18 . 22 . 43,97	G.
	(q) Juno.............	17,5	31,1	44,4	58,2	11,7	......	21 . 13	+ 13,56	21 . 12 . 58,14	G.
	β Aquarii.........	35,4	49,0	2,2	16,0	29,6	43,0	21 . 23 . 56,7		21 . 23 . 15,99	G.
	Castor............	43,5	59,2	15,1	31,3	47,0	3,0	7 . 25 . 18,9		7 . 24 . 31,14	C.
	Procyon..........	20,5	34,2	47,3	1,1	14,4	28,0	7 . 31 . 41,6		7 . 31 . 1,01	C.
	Pollux.	52,8	8,0	23,2	38,8	54,0	9,1	7 . 36 . 24,5		7 . 35 . 38,63	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Steady. (*b*) Wire II. doubtful. (*c*) Observed as single. Most probably the observation is 5s in defect. (*d*) Cloudy. (*e*) Not good. (*f*) Great motion. Wire II. being written down confusedly 18,6, is rejected. (*g*) Hurried. Wire I. was set down 10,7, not being taken from the clock. (*h*) Pretty good. (*i*) Very faint. (*k*) Observed as single. (*l*) Hurried. Not seen double. (*m*) A star brighter and of greater N.P.D. than Σ 2437, and following it 2s or 3s. (*n*) Appeared to be a very close double. The observation was hurried and the eye-glass out of focus: 5s have been added to all the wires. (*o*) Faint. (*p*) Wires lost by the star's extreme faintness. It was not brought to the middle of the field for fear of losing it. (*q*) Extremely faint: sky hazy.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	+ 0,02	+ 4,21	44,46			0,59	60,12	15 . 49 . 44,97	+ 2,48	ζ Ursæ Minoris.
			22,00					17 . 6 . 22,54		Mars 1 L.
			41,71	42,33	60,62			17 . 27 . 42,26	− 3,31	α Ophiuchi.
			50,24	50,79	60,55			18 . 22 . 50,81	+ 6,73	δ Ursæ Minoris.
			1,41					21 . 19 . 2,05		Juno.
			21,28	21,90	60,62			21 . 23 . 21,93	− 4,45	β Aquarii.
			15,84					21 . 44 . 16,49	− 4,18	Σ 2834
			46,89	47,51	60,62			21 . 57 . 47,55	− 4,37	α Aquarii.
			23,76			0,65	60,73	17 . 8 . 24,95		Mars 1 L.
			41,14	42,31	61,17			17 . 27 . 42,34	− 3,29	α Ophiuchi.
			10,18	11,45	61,27			19 . 43 . 11,44	− 4,01	α Aquilæ.
			38,84	40,13	61,29			19 . 47 . 40,10	− 4,04	β Aquilæ.
			} 4,90			0,62	61,39	10 . 18 . 6,56		☉'s center.
			49,44	51,30	61,86			16 . 19 . 51,25	− 3,81	Antares.
			30,83	32,58	61,75			17 . 7 . 32,66	− 3,13	α Herculis.
			27,00					17 . 10 . 28,83		Mars 1 L.
			40,35	42,30	61,95			17 . 27 . 42,19	− 3,28	α Ophiuchi.
			26,31					21 . 17 . 28,25		Juno.
			20,03	21,90	61,87			21 . 23 . 21,97	− 4,45	β Aquarii.
	− 0,12	+ 3,46	48,46			0,70	62,97	17 . 16 . 51,93		Mars 1 L.
			38,77	42,25	63,48					α Ophiuchi.
			} 39,82			0,64	63,78	10 . 32 . 43,88		☉'s center.
			28,06	32,29	4,23		3,78			Arcturus.
			5,82	9,91	4,09					ε Bootis.
			22,37			0,60	4,28	15 . 52 . 27,05		☽ 1 L.
			5,87	10,52	4,65			16 . 6 . 10,55	− 3,12	δ Ophiuchi.
			38,30					16 . 11 . 42,98	− 3,64	σ Scorpii.
			46,59	51,21	4,62			16 . 19 . 51,28	− 3,72	Antares.
			27,81	32,50	4,69			17 . 7 . 32,52	− 3,05	α Herculis.
			37,45	42,22	4,77			17 . 27 . 42,17	− 3,20	α Ophiuchi.
			43,62	48,36	4,74					δ Ursæ Minoris.
			51,18					18 . 41 . 55,93	− 3,50	Σ 2400.
			33,19					18 . 44 . 37,94	− 3,63	Σ 2408.
			3,07					18 . 55 . 7,82	− 3,50	⁎ N.P.D. 71°. 6′.
			6,56	11,40	4,84			19 . 43 . 11,33	− 3,96	α Aquilæ.
			35,34	40,09	4,75			19 . 47 . 40,11	− 4,00	β Aquilæ.
			5,37					19 . 54 . 10,15	− 3,31	Σ 2611. *sp.*
			31,93					20 . 6 . 36,71	− 3,90	Σ 2651.
		+ 4,84	26,85	32,26	5,41	0,74	4,89	14 . 8 . 32,18	− 2,07	Arcturus.
			5,15	10,50	5,35			16 . 6 . 10,54	− 3,10	δ Ophiuchi.
			45,86	51,20	5,34			16 . 19 . 51,25	− 3,71	Antares.
			52,71					16 . 54 . 58,12		☽ 1 L.
			27,13	32,48	5,35			17 . 7 . 32,55	− 3,03	α Herculis.
			20,99					17 . 12 . 26,41	− 4,03	θ Ophiuchi.
			25,54					17 . 23 . 30,97		Mars 1 L.
			36,71	42,20	5,49			17 . 27 . 42,14	− 3,18	α Ophiuchi.
			41,42	47,95	6,53			18 . 22 . 46,88	+ 9,57	δ Ursæ Minoris.
			58,46					21 . 13 . 4,00		Juno.
			16,31	21,91	5,60			21 . 23 . 21,86	− 4,46	β Aquarii.
			31,31	37,39	6,08	0,75	5,66	7 . 24 . 37,20	− 2,94	Castor.
			1,28	7,20	5,92			7 . 31 . 7,17	− 2,35	Procyon.
			38,81	44,78	5,97			7 . 35 . 44,71	− 2,77	Pollux.

Aug. 30. 3^h, the clock was put forward 1^m.
Aug. 30. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Sept. 2	(a) ☉ 1 L.	......	0,5	13,6	27,4	41,1	54,4	10 . 43 . 7,8	− 6,82	10 . 42 . 27,31	C.
	☉ 2 L.	55,2	9,0	22,5	36,2	49,9	3,3	10 . 45 . 17,0		10 . 44 . 36,16	C.
	(b) Spica	10,4	24,3	37,9	51,6	5,3	19,1	13 . 17 . 32,7		13 . 16 . 51,61	C.
	Arcturus	42,8	57,2	11,5	26,0	40,3	54,5	14 . 9 . 8,8		14 . 8 . 25,87	C.
	(c) Antares	59,6	14,6	29,7	44,9	59,9	14,7	16 . 20 . 29,8		16 . 19 . 44,74	C.
	(d) α Herculis	44,4	58,5	12,1	26,1	40,2	54,0	17 . 8 . 8,0		17 . 7 . 26,19	C.
	θ Ophiuchi	35,4	50,4	5,0	20,2	35,0	49,7	17 . 13 . 4,6		17 . 12 . 20,04	C.
	e^2 Ophiuchi	3,7	18,5	33,2	48,2	2,8	17,4	17 . 22 . 32,2		17 . 21 . 48,00	C.
	Mars 1 L.	55,3	10,5	25,4	40,8	55,8	10,8	17 . 26 . 25,7		17 . 25 . 40,61	C.
	(e) α Ophiuchi	......	8,2	21,8	35,8	49,6	3,5	17 . 28 . 17,2	− 6,91	17 . 27 . 35,77	C.
	☽ 1 L.	30,9	46,4	1,5	16,8	32,1	47,3	17 . 57 . 2,6		17 . 56 . 16,80	C.
	(f) Σ 2278	......	13,9	37,8	2,6	27,0	51,1	18 . 1 . 15,4	− 12,18	18 . 0 . 2,45	C.
	(g) λ Sagittarii	30,0	45,2	0,0	15,1	29,9	44,7	18 . 18 . 59,6		18 . 18 . 14,93	C.
	δ Ursæ Minoris	11.21,7	15. 9,2	......	22.44,0	26.31,2	30.15,8	18	+ 1 . 30,37	18 . 22 . 42,75	C.
	φ Sagittarii	3,5	18,7	33,6	49,0	4,1	19,1	18 . 36 . 34,2		18 . 35 . 48,89	C.
	(h) Σ 2402	36,3	50,2	3,6	17,8	31,2	45,0	18 . 42 . 58,7		18 . 42 . 17,55	C.
	Σ 2437	15,5	30,0	44,1	58,2	12,6	26,8	18 . 55 . 41,0		18 . 54 . 58,32	C.
	(i) ⚹ N.P.D. 66°. 52′	......	34,2	48,6	3,4	18,1	32,7	18 . 57 . 47,2	− 7,32	18 . 57 . 3,38	C.
	17 Lyræ	38,5	54,3	10,2	26,4	42,2	58,1	19 . 2 . 14,0		19 . 1 . 26,24	C.
	α Aquilæ	24,2	37,8	51,2	5,1	18,5	32,0	19 . 43 . 45,6		19 . 43 . 4,91	C.
	β Aquilæ	52,9	6,6	20,0	33,6	47,2	0,6	19 . 48 . 14,2		19 . 47 . 33,59	C.
	Juno	36,0	49,6	3,1	16,7	30,2	43,8	21 . 12 . 57,1		21 . 12 . 16,64	C.
Sept. 3	(k) δ Ursæ Minoris S.P.	11.15,2	15. 2,0	18.47,0	22.33,7	26.24,3	30. 8,2	6 . 33 . 58,0		6 . 22 . 35,49	C.
	Castor	42,0	58,0	13,6	29,8	45,7	1,6	7 . 25 . 17,7		7 . 24 . 29,78	C.
	Procyon	19,0	32,6	46,0	59,7	13,3	26,6	7 . 31 . 40,2		7 . 30 . 59,63	C.
	Pollux	51,4	6,7	21,8	37,2	52,7	8,0	7 . 36 . 23,2		7 . 35 . 37,29	C.
Sept. 4	(l) ☉ 1 L.	59,9	13,6	27,0	......	......	......	10 . 55 . 21,6	+ 10,24	10 . 54 . 40,77	C.
	(l) ☉ 2 L.	......	22,1	35,4	49,3	3,0	16,5	10 . 57 . 30,2	− 6,81	10 . 56 . 49,27	C.
	(m) Spica	9,2	23,0	36,4	50,3	4,0	17,5	13 . 17 . 31,3		13 . 16 . 50,24	C.
	(m) Arcturus	41,4	55,8	10,0	24,3	38,9	53,1	14 . 9 . 7,4		14 . 8 . 24,41	C.
	α Ophiuchi	53,0	6,8	20,5	34,3	48,2	2,0	17 . 28 . 15,7		17 . 27 . 34,36	C.
	Mars 1 L.	30,8	46,0	0,8	16,3	31,4	46,3	17 . 31 . 1,4		17 . 30 . 16,15	C.
	δ Ursæ Minoris	11.20,6	15. 8,0	18.52,5	22.42,0	26.27,8	30.15,0	18 . 34 . 2,7		18 . 22 . 41,23	C.
	(n) Σ 2369	18,2	31,6	45,1	58,9	2,2	15,7	18 . 36 . 29,2		18 . 35 . 58,70	C.
	Σ 2408. *p.*	49,1	2,7	16,2	30,1	43,8	57,4	18 . 45 . 11,1		18 . 44 . 30,05	C.
	Σ 2437	14,0	28,3	42,4	56,8	11,0	25,1	18 . 55 . 39,4		18 . 54 . 56,72	C.
	(o) Σ 2445. *nf.*	14,3	29,2	43,7	58,6	13,1	27,7	18 . 58 . 42,2		18 . 57 . 58,40	C.
	17 Lyræ	36,9	53,1	8,4	25,0	40,8	56,6	19 . 2 . 12,7		19 . 1 . 24,79	C.
	(p) Σ 2482	21,8	36,0	50,1	4,6	18,7	32,9	19 . 6 . 47,0		19 . 6 . 4,44	C.
	ρ^1 Sagittarii	47,7	1,9	16,0	30,3	44,6	58,8	19 . 13 . 13,0		19 . 12 . 30,32	C.
	(c) e^2 Sagittarii	46,6	0,7	14,4	29,0	43,0	56,6	19 . 34 . 10,7		19 . 33 . 28,72	C.
	(q) α Aquilæ	22,5	36,2	49,7	3,6	17,2	30,7	19 . 43 . 44,2		19 . 43 . 3,44	C.
	β Aquilæ	51,3	5,0	18,5	32,1	45,7	59,3	19 . 48 . 12,9		19 . 47 . 32,11	C.
	☽ 1 L.	25,2	39,8	54,3	9,2	23,8	38,6	19 . 51 . 53,0		19 . 51 . 9,13	C.
	α^2 Capricorni	35,3	49,2	3,0	17,0	30,8	44,5	20 . 9 . 58,2		20 . 9 . 16,86	C.
	(c) υ Capricorni	20,2	34,7	48,9	3,1	17,2	31,5	20 . 31 . 46,0		20 . 31 . 3,08	C.
	(r) Juno	......	29,9	43,1	56,9	10,4	23,8	21 . 11 . 37,6	− 6,79	21 . 10 . 56,83	C.
Sept. 5	(s) ☉ 1 L.	36,0	49,7	3,3	16,8	30,6	44,2	10 . 53 . 57,5		10 . 53 . 16,87	C.
	(s) ☉ 2 L.	44,3	58,2	11,7	25,6	39,0	52,7	10 . 56 . 6,1		10 . 55 . 25,37	C.
	(b) ε Bootis	15,7	31,1	46,0	1,3	16,6	32,0	14 . 38 . 47,2		14 . 38 . 1,41	C.
	α Coronæ Borealis	10,8	26,0	41,0	56,3	11,5	26,5	15 . 28 . 41,7		15 . 27 . 56,26	C.
	(b) α Serpentis	45,6	59,3	13,0	26,6	40,2	53,7	15 . 37 . 7,3		15 . 36 . 26,53	C.
	Antares	57,4	12,5	27,3	42,6	57,6	12,3	16 . 20 . 27,4		16 . 19 . 42,44	C.
	α Ophiuchi	52,2	6,2	19,6	33,8	47,5	1,3	17 . 28 . 15,1		17 . 27 . 33,67	C.
	Mars 1 L.	50,9	6,2	21,0	36,5	51,3	6,5	17 . 33 . 21,4		17 . 32 . 36,26	C.
	(t) Σ 2278	49,1	13,5	37,3	2,2	26,7	51,0	18 . 1 . 15,1		18 . 0 . 2,13	C.
	(u) Σ 2369	17,4	31,1	44,5	58,2	11,7	25,1	18 . 36 . 38,5		18 . 35 . 58,07	C.
	Σ 2402	34,2	48,1	1,6	15,5	29,2	42,7	18 . 42 . 56,3		18 . 42 . 15,37	C.
	(x) ⚹ N.P.D. 71°. 6′	16,4	31,0	45,1	59,3	13,7	27,7	18 . 55 . 42,0		18 . 54 . 59,32	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Unsatisfactory. So much stray light that the wires for this limb were scarcely visible. (*b*) Very unsteady. (*c*) Not good. (*d*) Disturbed by noise in the court. (*e*) Hurried: too soon after Mars. (*f*) The first of three: taken in hardly enough day-light for seeing the wires. Wire II. was written down hurriedly 14,9. (*g*) Wire VI. was set down 40,7. (*h*) Seemed double, but was taken as single. (*i*) A star of about the 8th mag. preceding Σ 2445. (*k*) Unsteady. Wires VI. and VII. cloudy and doubtful. (*l*) Cloudy. (*m*) Unsteady. (*n*) Seemed double: no star near of equal magnitude. (*o*) The counting being found 1ˢ in defect, the observation has been altered accordingly. (*p*) Appeared a close double. (*q*) Blazing. (*r*) Cloud. The observation was hurried. A note was made, '1ˢ in defect:' it has been corrected accordingly. (*s*) Great waving. (*t*) The *np* of the two close stars. (*u*) Appeared a close double: observed as single. (*x*) Not satisfactory.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	− 0,12	+ 4,84	32,00			0,75	5,66	10 . 43 . 37,99		☉'s center.
			51,94	58,15	6,21			13 . 16 . 58,02	− 2,28	Spica.
			26,08	32,25	6,17			14 . 8 . 32,18	− 2,06	Arcturus.
			45,14	51,18	6,04			16 . 19 . 51,31	− 3,69	Antares.
			26,42	32,46	6,04			17 . 7 . 32,61	− 3,01	α Herculis.
			20,44					17 . 12 . 26,64	− 4,01	θ Ophiuchi.
			48,39					17 . 21 . 54,59	− 4,04	e^2 Ophiuchi.
			41,02					17 . 25 . 47,22		Mars 1 L.
			36,01	42,18	6,17			17 . 27 . 42,22	− 3,16	α Ophiuchi.
			17,19					17 . 56 . 23,41		☽ 1 L.
			2,47					18 . 0 . 8,69	− 1,94	Σ 2278.
			15,33					18 . 18 . 21,56	− 4,43	λ Sagittarii.
			40,20	47,52	7,32			18 . 22 . 46,43	+ 10,00	δ Ursæ Minoris.
			49,30					18 . 35 . 55,54	− 4,58	φ Sagittarii.
			17,80					18 . 42 . 24,04	− 3,59	Σ 2402.
			58,54					18 . 55 . 4,79	− 3,47	Σ 2437.
			3,59					18 . 57 . 9,84	− 3,39	✱ N.P.D. 66°. 52′.
			26,41					19 . 1 . 32,66	− 3,22	17 Lyræ.
			5,17	11,38	6,21			19 . 43 . 11,45	− 3,94	α Aquilæ.
			33,85	40,07	6,22			19 . 47 . 40,13	− 3,98	β Aquilæ.
			16,96					21 . 12 . 23,28		Juno.
		+ 5,34	38,92	46,89	7,97	0,67	7,13	18 . 22 . 46,23	+ 10,63	δ Ursæ Minoris.
			29,96	37,44	7,48			7 . 24 . 37,30	− 2,99	Castor.
			59,92	7,25	7,33			7 . 31 . 7,26	− 2,40	Procyon.
			37,49	44,84	7,35			7 . 35 . 44,83	− 2,83	Pollux.
			45,31					10 . 55 . 52,75		☉'s center.
			50,60	58,13	7,53			13 . 16 . 58,10	− 2,26	Spica.
			24,64	32,22	7,58			14 . 8 . 32,16	− 2,03	Arcturus.
			34,63	42,15	7,52			17 . 27 . 42,25	− 3,13	α Ophiuchi.
			16,60					17 . 30 . 24,22		Mars 1 L.
			38,36	46,67	8,31			18 . 22 . 46,00	+ 10,85	δ Ursæ Minoris.
			59,00					18 . 36 . 6,65	− 3,72	Σ 2369.
			30,32					18 . 44 . 37,97	− 3,57	Σ 2408. *p.*
			56,96					18 . 55 . 4,62	− 3,44	Σ 2437.
			58,63					18 . 58 . 6,29	− 3,37	Σ 2445. *nf.*
			24,97					19 . 1 . 32,63	− 3,18	17 Lyræ.
			4,68					19 . 6 . 12,34	− 3,50	Σ 2482.
			30,71					19 . 12 . 38,38	− 4,41	ρ^1 Sagittarii.
			29,11					19 . 33 . 36,79	− 4,45	e^2 Sagittarii.
			3,72	11,35	7,63			19 . 43 . 11,40	− 3,91	α Aquilæ.
			32,40	40,05	7,65			19 . 47 . 40,08	− 3,96	β Aquilæ.
			9,53					19 . 51 . 17,22		☽ 1 L.
			17,23	24,81	7,58			20 . 9 . 24,92	− 4,46	α^2 Capricorni.
			3,48					20 . 31 . 11,18	− 4,66	υ Capricorni.
			57,18					21 . 11 . 4,90		Juno.
	− 0,81		21,38			0,65	7,78	10 . 54 . 29,46		☉'s center.
			1,57	9,82	8,25			14 . 38 . 9,75	− 1,98	ε Bootis.
			56,42	4,70	8,28			15 . 28 . 4,62	− 2,16	α Coronæ Borealis.
			26,79	35,09	8,30			15 . 36 . 34,99	− 2,68	α Serpentis.
			42,87	51,12	8,25			16 . 19 . 51,09	− 3,63	Antares.
			33,91	42,13	8,22			17 . 27 . 42,16	− 3,11	α Ophiuchi.
			36,70					17 . 32 . 44,96		Mars 1 L.
			2,06					18 . 0 . 10,33	− 1,82	Σ 2278.
			58,35					18 . 36 . 6,63	− 3,70	Σ 2369.
			15,61					18 . 42 . 23,90	− 3,55	Σ 2402.
			59,52					18 . 55 . 7,81	− 3,43	✱ N.P.D. 71°. 6′.

Sept. 8. 3h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Sept. 5	Σ 2445. *nf.*	13,8	28,3	43,0	58,0	12,5	27,0	18 . 58 . 40,6		18 . 57 . 57,60	C.
	(*a*) Σ 2482...........	21,0	35,2	49,3	4,0	18,1	32,2	19 . 6 . 46,2		19 . 6 . 3,71	C.
	(*b*) β Aquilæ.........	50,8	4,4	18,0	31,7	45,1	58,6	19 . 48 . 12,1		19 . 47 . 31,53	C.
	Σ 2611. *sp.*	2,5	22,1	41,8	1,8	21,4	41,2	19 . 55 . 0,8		19 . 54 . 1,66	C.
	Σ 2651...........	46,2	0,6	14,2	28,3	42,2	56,2	20 . 7 . 10,1		20 . 6 . 28,26	C.
	α^2 Capricorni	34,7	48,5	2,4	16,3	30,1	43,9	20 . 9 . 57,7		20 . 9 . 16,23	C.
	υ Capricorni......	19,8	34,0	48,1	2,5	16,7	30,8	20 . 31 . 45,0		20 . 31 . 2,41	C.
	☽ 1 L.	1,0	15,4	29,6	44,1	58,3	12,6	20 . 44 . 26,9		20 . 43 . 43,98	C.
	ν Aquarii.........	16,9	30,6	44,1	58,1	11,9	25,6	21 . 1 . 39,2		21 . 0 . 58,06	C.
	(*c*) Juno	37,6	51,1	4,8	18,3	31,7	45,4	21 . 10 . 59,1		21 . 10 . 18,29	C.
	β Aquarii	32,8	46,2	59,6	13,3	26,9	40,5	21 . 23 . 53,8		21 . 23 . 13,30	C.
	Regulus	12,1	25,8	39,5	53,5	7,4	20,9	10 . 0 . 34,8		9 . 59 . 53,43	G.
Sept. 6	(*d*) ☉ 1 L.	12,5	26,0	......	......	6,4	20,2	10 . 57 . 33,7	− 2,73	10 . 56 . 53,03	G.
	☉ 2 L.	20,8	34,1	47,7	1,1	15,1	28,5	10 . 59 . 42,3		10 . 59 . 1,37	G.
	α Ophiuchi	51,3	5,3	18,9	32,8	46,8	0,5	17 . 28 . 14,1		17 . 27 . 32,81	G.
	Mars 1 L.	......	27,7	42,5	57,9	12,9	28,0	17 . 35	0,00	17 . 34 . 57,80	G.
	α Aquilæ.........	21,1	34,8	48,3	2,0	15,7	29,2	19 . 43 . 42,8		19 . 43 . 1,98	G.
	β Aquilæ.	50,1	3,7	17,1	30,9	44,3	57,8	19 . 48 . 11,4		19 . 47 . 30,75	G.
	α^2 Capricorni	33,8	47,8	1,4	15,4	29,2	43,0	20 . 9 . 56,8		20 . 9 . 15,34	G.
	ν Aquarii	16,0	29,7	43,4	57,3	11,0	24,7	21 . 1 . 38,4		21 . 0 . 57,22	G.
	Juno	0,2	13,8	27,5	41,0	54,8	......	21 . 9	+ 13,58	21 . 9 . 41,04	G.
	β Aquarii	31,8	45,4	58,8	12,7	26,0	39,4	21 . 23 . 53,0		21 . 23 . 12,44	G.
	(*e*) ☽ 1 L.	42,6	56,7	10,4	24,5	38,7	52,8	21 . 34 . 6,8		21 . 33 . 24,64	G.
Sept. 7	(*f*) ☉ 1 L.	47,8	1,4	14,7	28,4	42,1	55,7	11 . 1 . 9,0		11 . 0 . 28,45	C.
	☉ 2 L.	55,1	9,7	23,0	36,7	50,2	3,7	11 . 3 . 17,5		11 . 2 . 36,56	C.
	Arcturus	39,0	53,4	7,6	22,1	36,5	50,7	14 . 9 . 5,0		14 . 8 . 22,04	C.
	(*b*) ε Bootis	14,1	29,2	44,3	59,7	14,7	30,0	14 . 38 . 45,2		14 . 37 . 59,60	C.
	Antares	55,7	11,0	25,7	41,1	56,0	10,8	16 . 20 . 25,9		16 . 19 . 40,88	C.
	α Ophiuchi	50,5	4,3	18,0	32,0	45,9	59,3	17 . 28 . 13,3		17 . 27 . 31,90	C.
	Mars 1 L.	35,3	50,5	5,2	20,6	35,7	50,8	17 . 38 . 6 0		17 . 37 . 20,58	C.
	δ Ursæ Minoris...	11.14,8	15. 3,0	18.47,7	22.38,3	26.25,0	30.10,2	18 . 33 . 57,0		18 . 22 . 36,57	C.
	(*g*) Σ 2400...........	3,7	17,6	31,3	45,8	59,9	13,7	18 . 42 . 27,8		18 . 41 . 45,69	C.
	* N.P.D. 71° . 6′.	14,7	29,1	43,2	57,7	12,0	26,0	18 . 55 . 40,2		18 . 54 . 57,56	C.
	(*h*) * N.P.D. 66° . 52′.	......	......	44,9	59,7	14,2	28,9	18 . 57 . 43,2	− 14,64	18 . 56 . 59,54	C.
	(*i*) Σ 2482.	19,2	33,6	47,7	2,2	16,3	30,2	19 . 6 . 44,6		19 . 6 . 1,97	C.
	(*k*) Σ 2490.	58,2	......	......	38,7	52,1	5,7	19 . 10 . 19,1	− 8,12	19 . 9 . 38,64	C.
	α Aquilæ.........	20,2	33,9	47,2	1,0	14,7	28,1	19 . 43 . 41,8		19 . 43 . 0,98	C.
	β Aquilæ..	49,1	2,7	16,1	29,8	43,2	57,0	19 . 48 . 10,4		19 . 47 . 29,76	C.
	β Aquarii	30,9	44,6	58,0	11,7	25,1	38,7	21 . 23 . 52,2		21 . 23 . 11,60	C.
	(*l*) 30 Aquarii	......	......	......	55,2	8,7	22,1	21 . 55 . 35,6	− 20,39	21 . 54 . 55,01	C.
	(*m*) θ Aquarii	46,2	59,6	13,1	26,9	40,7	54,1	22 . 9 . 7,8		22 . 8 . 26,92	C.
	☽ 1 L.	10,2	24,3	37,8	51,8	5,7	19,5	22 . 21 . 33,3		22 . 20 . 51,80	C.
	(*n*) η Aquarii	31,1	44,6	57,9	11,6	24,9	38,2	22 . 27 . 52,0		22 . 27 . 11,47	C.
	λ Aquarii.........	38,6	52,2	5,7	19,5	33,0	46,6	22 . 45 . 0,2		22 . 44 . 19,40	C.
	β Piscium	6,9	20,3	33,7	47,3	1,0	14,3	22 . 56 . 27,9		22 . 55 . 47,35	C.
Sept. 8	(o) ☉ 1 L.	23,3	36,8	50,3	3,9	17,7	31,2	11 . 4 . 44,5		11 . 4 . 3,96	C.
	☉ 2 L.	31,4	45,2	58,3	12,2	25,8	39,5	11 . 6 . 53,0		11 . 6 . 12,20	C.
	Arcturus.........	38,3	52,6	6,7	21,2	35,7	50,0	14 . 9 . 4,3		14 . 8 . 21,25	C.
	α Herculis.........	39,8	53,8	7,4	21,7	35,3	49,2	17 . 8 . 3,2		17 . 7 . 21,48	C.
	α Ophiuchi.......	49,7	3,6	17,1	31,1	45,0	58,8	17 . 28 . 12,3		17 . 27 . 31,08	C.
	Mars 1 L.	59,3	14,7	29,6	44,9	59,9	15,0	17 . 40 . 30,0		17 . 39 . 44,77	C.
	(*p*) Σ 2400...........	2,8	17,0	30,9	45,0	59,0	13,1	18 . 42 . 27,0		18 . 41 . 44,97	C.
	(*m*) * N.P.D. 66° . 52′.	14,7	29,6	43,9	59,0	13,3	28,2	18 . 57 . 42,5		18 . 56 . 58,75	C.
	(*q*) Σ 2490.	57,4	11,1	24,4	38,1	51,7	5,0	19 . 10 . 18,4		19 . 9 . 38,02	C.
	β Aquilæ	48,2	2,0	15,3	29,1	42,7	56,1	19 . 48 . 9,7		19 . 47 . 29,02	C.
	α^2 Capricorni	32,2	46,2	59,9	13,8	27,6	41,3	20 . 9 . 55,2		20 . 9 . 13,74	C.
Sept. 9	(*r*) ☉ 1 L.	58,7	12,4	25,5	39,5	52,8	6,5	11 . 8 . 19,8		11 . 7 . 39,32	C.
	☉ 2 L.	6,8	20,4	33,8	47,5	1,0	14,6	11 . 10 . 28,1		11 . 9 . 47,46	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA.*

(*a*) The observation has been diminished 5^s. Another star of less N.P.D. preceded about 40^s. (*b*) Not good. (*c*) Faint and rather doubtful. Wire VI. was written down confusedly 44,5. (*d*) Very unsatisfactory. So great a quantity of stray light that the wires could not be seen. Wires III. and IV., which were set down 40,0 and 54,1, are rejected. (*e*) The first three wires have been increased 30^s. The observer had no confidence in his observations this day, feeling unwell. (*f*) The Telescope was not correctly pointed for this Limb. (*g*) Observed as single. This is the preceding of several stars. (*h*) Hurried: too soon after the preceding. The observation has been diminished by 10^s. (*i*) As single: appeared very close. (*k*) *Very* faint. Not brighter than the 9th magnitude. Wires II. and III. were rejected as being too uncertain. (*l*) Hurried. (*m*) Not satisfactory. (*n*) Bad illumination of the field. (o) Great vibration. (*p*) As single. (*q*) Faint, but pretty good observation. (*r*) Disturbed by noise in the court: Wire VI. of 1 L. was set down 7,5.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	− 0,81	+ 5,34	57,79			0,65	7,78	18 . 58 . 6,08	− 3,35	Σ 2445. *nf.*
			3,91					19 . 6 . 12,21	− 3,49	Σ 2482.
			31,79	40,04	8,25			19 . 47 . 40,11	− 3,95	β Aquilæ.
			1,69					19 . 54 . 10,01	− 3,22	Σ 2611. *sp.*
			28,47					20 . 6 . 36,79	− 3,85	Σ 2651.
			16,58	24,80	8,22			20 . 9 . 24,91	− 4,45	α² Capricorni.
			2,79					20 . 31 . 11,13	− 4,66	ν Capricorni.
			44,35					20 . 43 . 52,69		☽ 1 L.
			58,41					21 . 1 . 6,76	− 4,54	ν Aquarii.
			18,61					21 . 10 . 26,96		Juno.
			13,62	21,90	8,28			21 . 23 . 21,98	− 4,45	β Aquarii.
			53,67	2,42	8,75	0,90	8,35	10 . 0 . 2,39	− 2,08	Regulus.
			57,46					10 . 58 . 6,22		☉'s center.
			33,05	42,11	9,06			17 . 27 . 42,06	− 3,09	α Ophiuchi.
			58,24					17 . 35 . 7,25		Mars 1 L.
			2,23	11,33	9,10			19 . 43 . 11,32	− 3,89	α Aquilæ.
			31,01	40,03	9,02			19 . 47 . 40,10	− 3,94	β Aquilæ.
			15,69	24,80	9,11			20 . 9 . 24,79	− 4,45	α² Capricorni.
			57,57					21 . 1 . 6,71	− 4,54	ν Aquarii.
			41,37					21 . 9 . 50,51		Juno.
			12,76	21,90	9,14			21 . 23 . 21,91	− 4,45	β Aquarii.
			24,98					21 . 33 . 34,14		☽ 1 L.
		+ 3,49	32,68			0,74	9,52	11 . 1 . 42,54		☉'s center.
			22,16	32,18	10,02			14 . 8 . 32,11	− 1,99	Arcturus.
			59,70	9,79	10,09			14 . 38 . 9,67	− 1,95	ε Bootis.
			41,17	51,09	9,92			16 . 19 . 51,19	− 3,60	Antares.
			32,05	42,10	10,05			17 . 27 . 42,11	− 3,08	α Ophiuchi.
			20,88					17 . 37 . 30,94		Mars 1 L.
			34,23	45,48	11,25			18 . 22 . 44,32	+ 12,04	δ Ursæ Minoris.
			45,82					18 . 41 . 55,92	− 3,39	Σ 2400.
			57,69					18 . 55 . 7,79	− 3,40	⁎ N.P.D. 71°. 6′.
			59,67					18 . 57 . 9,77	− 3,31	⁎ N.P.D. 66°. 52′.
			2,10					19 . 6 . 12,21	− 3,46	Σ 2482.
			38,85					19 . 9 . 48,96	− 3,98	Σ 2490.
			1,14	11,32	10,18			19 . 43 . 11,27	− 3,88	α Aquilæ.
			29,93	40,02	10,09			19 . 47 . 40,06	− 3,93	β Aquilæ.
			11,81	21,90	10,09			21 . 23 . 21,99	− 4,45	β Aquarii.
			55,22					21 . 55 . 5,41	− 4,50	30 Aquarii.
			27,14					22 . 8 . 37,34	− 4,53	θ Aquarii.
			52,01					22 . 21 . 2,22		☽ 1 L.
			11,67					22 . 27 . 21,88	− 4,44	η Aquarii.
			19,62					22 . 44 . 29,84	− 4,53	λ Aquarii.
			47,53					22 . 55 . 57,76	− 4,42	β Piscium.
			8,25			0,72	10,27	11 . 5 . 18,85		☉'s center.
			21,37	32,17	10,80			14 . 8 . 32,06	− 1,98	Arcturus.
			21,63	32,36	10,73			17 . 7 . 32,41	− 2,91	α Herculis.
			31,23	42,08	10,85			17 . 27 . 42,02	− 3,06	α Ophiuchi.
			45,07					17 . 39 . 55,87		Mars 1 L.
			45,10					18 . 41 . 55,93	− 3,37	Σ 2400.
			58,88					18 . 57 . 9,72	− 3,30	⁎ N.P.D. 66°. 52′.
			38,23					19 . 9 . 49,07	− 3,97	Σ 2490.
			29,19	40,01	10,82			19 . 47 . 40,05	− 3,92	β Aquilæ.
			13,97	24,78	10,81			20 . 9 . 24,84	− 4,43	α² Capricorni.
			43,56			0,68	11,01	11 . 8 . 54,88		☉'s center.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Sept. 9	Arcturus.........	37,4	52,0	5,8	20,6	34,9	49,2	14. 9. 3,5		14. 8.20,48	C.
	Antares..........	54,2	9,4	24,2	39,4	54,5	9,2	16.20.24,3		16.19.39,32	C.
	α Ophiuchi.......	49,0	2,9	16,6	30,3	44,2	58,0	17.28.11,7		17.27.30,38	C.
	Mars 1 L.........	24,9	40,2	55,0	10,4	25,6	40,5	17.42.55,7		17.42.10,33	C.
	α^2 Capricorni.....	31,6	45,4	59,1	13,2	27,0	40,7	20. 9.54,6		20. 9.13,08	C.
	Juno.............	......	30,1	43,7	57,2	10,8	24,1	21. 8.....	0,00	21. 7.57,18	G.
	☽ 2 L............	40,3	54,4	8,0	22,1	35,7	49,6	23.55. 3,3		23.54.21,91	C.
	α Andromedæ....	24,1	39,3	54,4	9,9	25,2	40,4	0. 0.55,6		0. 0. 9,85	C.
	(a) *d* Piscium........	43,3	57,1	10,2	24,2	38,0	51,2	0.13. 5,1		0.12.24,16	C.
Sept. 11	☉ 1 L............	9,1	22,6	36,0	49,7	3,3	16,8	11.15.30,2		11.14.49,68	C.
	☉ 2 L............	17,0	30,7	44,1	57,9	11,3	24,8	11.17.38,4		11.16.57,75	C.
	α Aquilæ.........	17,4	31,0	44,5	58,2	11,8	25,5	19.43.39,0		19.42.58,20	C.
	β Aquilæ.........	46,4	0,0	13,3	27,0	40,6	54,0	19.48. 7,6		19.47.26,99	C.
	α^2 Capricorni.....	30,2	44,2	57,7	11,8	25,7	39,2	20. 9.53,1		20. 9.11,70	C.
	(b) Σ 2781. *np*.......	31,6	45,2	58,6	12,3	26,1	39,7	21. 8.53,3		21. 8.12,40	C.
	β Aquarii........	28,1	41,7	55,2	8,9	22,6	36,0	21.23.49,3		21.23. 8,83	C.
Sept. 12	α Herculis........	37,0	51,0	4,7	18,8	32,8	46,4	17. 8. 0,4		17. 7.18,73	C.
	α Ophiuchi.......	47,1	0,8	14,4	28,3	42,2	56,0	17.28. 9,8		17.27.28,37	C.
	Mars 1 L.........	49,8	4,8	19,7	35,2	50,3	5,3	17.50.20,4		17.49.35,07	C.
	δ Ursæ Minoris...	11.11,0	14.58,8	18.44,2	22.34,0	26.20,3	30. 6,7	18.33.52,5		18.22.32,50	C.
	⚹ N.P.D. 66°. 52′.	12,1	26,7	41,1	56,2	10,8	25,2	18.57.40,0		18.56.56,02	C.
	(c) Σ 2490. *nf*.......	54,7	8,3	21,5	35,2	49,0	2,2	19.10.15,8		19. 9.35,24	C.
	α Aquilæ.........	16,7	30,5	43,8	57,7	11,5	24,9	19.43.38,5		19.42.57,66	C.
	β Aquilæ.........	45,7	59,2	12,8	26,4	40,0	53,4	19.48. 7,1		19.47.26,37	C.
	α^2 Capricorni.....	29,6	43,3	57,0	11,1	24,9	38,7	20. 9.52,5		20. 9.11,01	C.
	⚹ N.P.D. 97°. 48′.	48,6	2,5	16,1	29,7	43,2	56,8	21.11.10,2		21.10.29,59	C.
	β Aquarii........	27,4	41,1	54,4	8,2	21,6	35,1	21.23.48,7		21.23. 8,07	C.
	(d) ⚹ N.P.D. 71°. 28′.	43,9	58,2	12,1	26,4	40,8	55,1	21.44. 9,1		21.43.26,52	C.
	(e) Σ 2878...........	49,7	3,1	16,6	30,3	44,0	57,4	22. 7.11,1		22. 6.30,31	C.
	η Aquarii.........	27,6	41,1	54,4	8,1	21,6	35,0	22.27.48,3		22.27. 8,02	C.
	(f) δ Ursæ Minoris SP.	11. 8,0	14.53,3	18.37,7	22.26,5	26.16,2	29.59,6	6.33.47,8		6.22.27,01	C.
	Castor............	36,0	51,9	7,7	23,9	39,8	55,6	7.25.11,6		7.24.23,78	C.
	Procyon..........	12,7	26,4	39,8	53,5	7,2	20,6	7.31.34,1		7.30.53,47	C.
	Pollux............	45,2	0,6	15,7	31,1	46,3	1,7	7.36.17,1		7.35.31,10	C.
Sept. 13	☉ 1 L............	18,7	32,4	45,7	59,6	13,0	26,4	11.22.40,0		11.21.59,40	C.
	☉ 2 L............	26,8	40,5	53,9	7,5	21,1	34,5	11.24.48,0		11.24. 7,47	C.
	(g) Spica.............	2,7	16,3	30,0	43,8	57,6	11,2	13.17.24,8		13.16.43,77	C.
	Mars 1 L.........	20,5	35,8	50,6	6,1	21,2	36,0	17.52.51,2		17.52. 5,92	C.
	Juno.............	17,4	31,1	44,6	58,5	12,2	25,5	21. 6.39,3		21. 5.58,37	C.
	(h) Σ 2781. *np*........	30,6	44,2	57,6	11,3	25,0	38,6	21. 8.52,2		21. 8.11,35	C.
	⚹ N.P.D. 97°. 48′.	48,2	2,0	15,3	29,2	42,9	56,4	21.11.10,1		21.10.29,16	C.
	β Aquarii........	27,0	40,6	53,9	7,7	21,2	34,6	21.23.48,2		21.23. 7,60	C.
Sept. 15	(i) ☉ 1 L............	......	42,6	55,9	9,6	23,2	36,5	11.29.50,2	− 6,76	11.29. 9,57	C.
	☉ 2 L............	36,8	50,4	3,7	17,5	31,0	44,4	11.31.58,0		11.31.17,40	C.
	(k) Arcturus.........	33,7	48,3	2,5	16,8	31,4	45,5	14. 9. 0,0		14. 8.16,89	C.
	(l) α Coronæ Borealis.	3,8	19,2	34,1	49,5	4,7	19,5	15.28.34,7		15.27.49,36	C.
	α Ophiuchi.......	45,2	59,2	12,9	26,7	40,6	54,3	17.28. 8,1		17.27.26,72	C.
	(l) Mars 1 L.........	25,8	40,9	55,8	11,2	26,2	41,2	17.57.56,4		17.57.11,07	C.
	β Aquarii........	25,8	39,2	52,8	6,5	20,1	33,4	21.23.47,0		21.23. 6,40	G.
	α Aquarii........	51,8	5,1	18,5	32,1	45,4	59,1	21.58.12,5		21.57.32,07	G.
Sept. 16	☉ 1 L............	3,5	17,2	30,4	44,3	57,8	11,1	11.33.24,8		11.32.44,16	C.
	☉ 2 L............	11,4	25,1	38,5	52,3	5,8	19,2	11.35.32,8		11.34.52,15	C.
	Arcturus.........	33,2	47,6	1,8	16,3	30,7	45,0	14. 8.59,3		14. 8.16,27	C.
	α Serpentis.......	38,3	51,8	5,4	19,2	32,8	46,3	15.36.59,8		15.36.19,09	C.
	Mars 1 L.........	59,8	15,2	30,0	45,3	0,4	15,2	18. 0.30,4		17.59.45,19	C.
	δ Ursæ Minoris...	11. 6,5	14.55,0	18.39,2	22.29,2	26.16,4	30. 2,6	18.33.48,5		18.22.28,20	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Not good. Observed through mist, without lamp-light. (*b*) Hurried at Wire I., which was set down 9,6, not being taken from the clock. (*c*) Faint. A close and small companion was seen *sp*. (*d*) A very faint double-star. (*e*) As single. (*f*) Very faint and unsteady. (*g*) Hurried. (*h*) Wire I. was set down 11,6, not being taken from the clock. The times for the other wires have each been increased 5ˢ. Scarcely time for this observation between the preceding and following. (*i*) Pretty steady and well-defined. Too late for Wire 1. of 1 L. (*k*) Unsteady. (*l*) Cloudy.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	– 0,81	+ 3,49	20,60	32,16	11,56	0,68	11,01	14 . 8 . 32,01	– 1,97	Arcturus.
			39,61	51,05	11,44			16 . 19 . 51,08	– 3,56	Antares.
			30,53	42,06	11,53			17 . 27 . 42,03	– 3,04	α Ophiuchi.
			10,63					17 . 42 . 22,14		Mars 1 L.
			13,31	24,77	11,46			20 . 9 . 24,89	– 4,42	α² Capricorni.
			57,40					21 . 8 . 9,01		Juno.
			22,08					23 . 54 . 33,77		☽ 2 L.
			9,95	21,62	11,67		11,69	0 . 0 . 21,64	– 4,57	α Andromedæ.
			24,33					0 . 12 . 36,03	– 4,41	*d* Piscium.
			53,89			0,65	12,29	11 . 16 . 6,48		☉'s center.
			58,36	11,27	12,91			19 . 43 . 11,18	– 3,83	α Aquilæ.
			27,16	39,97	12,81			19 . 47 . 39,99	– 3,88	β Aquilæ.
			11,93	24,74	12,81			20 . 9 . 24,76	– 4,39	α² Capricorni.
			12,62					21 . 8 . 25,48	– 4,44	Σ 2781. *np.*
			9,04	21,88	12,84			21 . 23 . 21,91	– 4,43	β Aquarii.
			18,88	32,28	13,40	0,68	12,92	17 . 7 . 32,28	– 2,83	α Herculis.
			28,52	42,01	13,49			17 . 27 . 41,94	– 2,99	α Ophiuchi.
			35,37					17 . 49 . 48,79		Mars 1 L.
			30,16	43,60	13,44			18 . 22 . 43,60	+ 13,92	δ Ursæ Minoris.
			56,15					18 . 57 . 9,61	– 3,23	✳ N.P.D. 66°. 52′.
			35,45					19 . 9 . 48,91	– 3,91	Σ 2490. *nf.*
			57,82	11,26	13,44			19 . 43 . 11,30	– 3,82	α Aquilæ.
			26,54	39,96	13,42			19 . 47 . 40,02	– 3,87	β Aquilæ.
			11,24	24,73	13,49			20 . 9 . 24,73	– 4,38	α² Capricorni.
			29,81					21 . 10 . 43,33	– 4,43	✳ N.P.D. 97°. 48′.
			8,28	21,88	13,60			21 . 23 . 21,81	– 4,43	β Aquarii.
			26,65					21 . 43 . 40,18	– 4,17	✳ N.P.D. 71°. 28′.
			30,48					22 . 6 . 44,03	– 4,34	Σ 2878.
			8,22					22 . 27 . 21,77	– 4,45	η Aquarii.
			29,65	43,40	13,75	0,64	13,65	18 . 22 . 43,47	+ 14,12	δ Ursæ Minoris.
			23,86	37,71	13,85			7 . 24 . 37,71	– 3,26	Castor.
			53,64	7,47	13,83			7 . 31 . 7,49	– 2,62	Procyon.
			31,19	45,09	13,90			7 . 35 . 45,04	– 3,08	Pollux.
			3,61					11 . 23 . 17,56		☉'s center.
			43,99	58,08	14,09			13 . 16 . 57,99	– 2,21	Spica.
			6,22					17 . 52 . 20,35		Mars 1 L.
			58,59					21 . 6 . 12,80		Juno.
			11,57					21 . 8 . 25,78	– 4,43	Σ 2781. *np.*
			29,38					21 . 10 . 43,60	– 4,43	✳ N.P.D. 97°. 48′.
			7,81	21,87	14,06			21 . 23 . 22,03	– 4,42	β Aquarii.
	– 0,29	+ 3,60	13,70			0,55	14,70	11 . 30 . 28,66		☉'s center.
			17,05	32,09	15,04			14 . 8 . 32,07	– 1,90	Arcturus.
			49,51	4,52	15,01			15 . 28 . 4,57	– 1,98	α Coronæ Borealis.
			26,90	41,95	15,05			17 . 27 . 42,00	– 2,93	α Ophiuchi.
			11,39					17 . 57 . 26,50		Mars 1 L.
			6,64	21,86	15,22			21 . 23 . 21,83	– 4,41	β Aquarii.
			32.30	47,54	15,24			21 . 57 . 47,50	– 4,40	α Aquarii.
			48,37			0,64	15,20	11 . 34 . 3,88		☉'s center.
			16,43	32,08	15,65			14 . 8 . 32,01	– 1,89	Arcturus.
			19,29	34,92	15,63			15 . 36 . 34,91	– 2,51	α Serpentis.
			45,50					18 . 0 . 1,18		Mars 1 L.
			26,27	41,91	15,64					δ Ursæ Minoris.

Sept. 17. 21h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Sept. 16	(a) ∗ N.P.D. 79°. 34′.	......	......	10,0	23,7	37,4	......	18 . 42	+ 0,01	18 . 42 . 23,71	C.
	α Aquilæ	14,7	28,2	41,7	55,5	9,0	22,7	19 . 43 . 36,1		19 . 42 . 55,41	C.
	β Aquilæ	43,4	57,0	10,4	24,2	37,7	51,1	19 . 48 . 4,6		19 . 47 . 24,06	C.
	Juno	3,9	17,5	31,1	45,0	58,6	12,2	21 . 5 . 25,8		21 . 4 . 44,87	C.
	Σ 2781.	28,8	42,3	55,8	9,7	23,2	36,7	21 . 8 . 50,1		21 . 8 . 9,52	C.
	∗ N.P.D. 97°. 48′.	46,4	0,2	13,6	27,3	41,1	54,4	21 . 11 . 8,1		21 . 10 . 27,30	C.
	(b) β Aquarii.	25,0	39,0	52,2	5,9	19,3	33,0	21 . 23 . 46,5		21 . 23 . 5,84	C.
	(c) ∗ N.P.D. 71°. 28′.	41,6	55,5	9,3	24,2	38,6	52,5	21 . 44 . 6,8		21 . 43 . 24,07	C.
	α Aquarii	51,0	4,5	18,0	31,6	44,9	58,3	21 . 58 . 11,8		21 . 57 . 31,44	C.
Sept. 17	(a) ☽ 2 L.	......	......	6,0	21,4	36,2	51,1	6 . 45 . 6,0	– 14,88	6 . 44 . 21,26	C.
Sept. 18	(a) ⊙ 1 L.	13,1	26,7	39,9	53,7	......	20,6	11 . 40 . 34,2	+ 2,26	11 . 39 . 53,63	C.
	(a) ⊙ 2 L.	21,1	34,6	48,0	1,7	15,2	28,5	11 . 42 . 42,0		11 . 42 . 1,58	C.
	Arcturus	31,7	46,3	0,4	14,9	29,2	43,5	14 . 8 . 57,9		14 . 8 . 14,84	C.
	(b) ε Bootis	6,7	22,1	37,0	52,4	7,4	22,7	14 . 38 . 38,1		14 . 37 . 52,34	C.
	α Herculis	33,2	47,2	1,0	15,1	29,0	42,7	17 . 7 . 56,5		17 . 7 . 14,96	C.
	α Aquilæ	12,8	26,7	40,0	53,8	7,6	21,0	19 . 43 . 34,7		19 . 42 . 53,80	C.
	β Aquilæ	41,9	55,4	9,0	22,6	36,1	59,4	19 . 48 . 3,1		19 . 47 . 22,50	C.
Sept. 20	⊙ 1 L.	22,4	36,0	49,3	3,0	16,4	30,0	11 . 47 . 43,3		11 . 47 . 2,91	C.
	⊙ 2 L.	30,2	44,0	57,4	11,1	24,6	38,0	11 . 49 . 51,5		11 . 49 . 10,97	C.
	Arcturus	30,4	45,0	59,2	13,7	28,0	42,1	14 . 8 . 56,5		14 . 8 . 13,56	C.
	Antares	47,0	2,2	17,0	32,1	47,2	2,2	16 . 20 . 17,0		16 . 19 . 32,10	C.
	Σ 2781. *np*.	25,7	39,6	53,1	6,8	20,3	33,9	21 . 8 . 47,4		21 . 8 . 6,69	C.
	(d) ∗ N.P.D. 97°. 48′.	......	57,2	10,8	24,6	38,2	51,7	21 . 11 . 5,2	– 6,80	21 . 10 . 24,48	C.
	β Aquarii	22,3	36,0	49,5	3,1	16,7	30,2	21 . 23 . 43,8		21 . 23 . 3,08	C.
	(e) α Andromedæ	16,7	32,4	47,6	3,2	18,3	33,4	0 . 0 . 48,7		0 . 0 . 2,90	C.
	(f) δ Ursæ Minoris SP.	10.57,4	14.45,0	18.31,2	22.16,6	26. 8,3	29.52,0	6 . 33 . 40,5		6 . 22 . 18,71	G.
Sept. 21	⊙ 1 L.	57,4	10,8	24,0	37,8	51,5	4,8	11 . 51 . 18,2		11 . 50 . 37,79	C.
	⊙ 2 L.	5,2	18,7	32,2	46,0	59,3	13,0	11 . 53 . 26,4		11 . 52 . 45,83	C.
	(g) Polaris SP.	38.15,8	46.43,3	55. 9,7	3.36,0	12. 8,8	20.29,5	13	+ 4 . 13,89	13 . 3 . 37,74	C.
	(a) Arcturus	29,7	44,2	58,3	13,1	......	......	14 . 8	+ 21,53	14 . 8 . 12,86	C.
	(h) α Andromedæ	......	......	......	......	17,7	32,8	0 . 0 . 48,0	– 30,56	0 . 0 . 2,27	C.
	(a) Polaris	......	......	......	......	12.20,3	20.43,6	1 . 29 . 12,0	– 16 . 55,06	1 . 3 . 50,24	C.
	α Ceti	9,1	22,5	35,8	49,7	3,1	16,4	2 . 54 . 29,9		2 . 53 . 49,50	C.
Sept. 22	(a) ⊙ 1 L.	......	45,8	59,2	12,9	26,4	39,9	11 . 54 . 53,5	– 6,75	11 . 54 . 12,87	C.
	(a) ⊙ 2 L.	40,4	53,9	7,3	......	......	......	11 . 56	+ 27,04	11 . 56 . 20,91	C.
	Polaris SP.	38.14,5	......	55. 8,4	3.33,7	12. 8,0	20.29,7	13 . 29 . 2,3	– 2 . 49,00	13 . 3 . 37,10	C.
	(i) α Serpentis	......	......	1,2	15,0	28,7	42,0	15 . 36 . 55,8	– 13,56	15 . 36 . 14,98	C.
	Mars 1 L.	46,6	1,9	16,8	32,0	47,1	......	18 . 15	+ 15,05	18 . 15 . 31,93	G.
	α Aquilæ	10,4	24,0	37,5	51,3	4,9	18,4	19 . 43 . 32,0		19 . 42 . 51,21	C.
	β Aquilæ	39,1	52,8	6,2	20,0	33,5	46,9	19 . 48 . 0,6		19 . 47 . 19,87	C.
	(k) Juno	......	......	......	......	......	28,1	21 . 3 . 41,6	– 34,19	21 . 3 . 0,66	C.
	β Aquarii	21,0	34,6	48,2	1,9	15,3	28,8	21 . 23 . 42,2		21 . 23 . 1,71	C.
	α Andromedæ	15,8	31,2	46,3	1,8	17,1	32,2	0 . 0 . 47,6		0 . 0 . 1,71	C.
Sept. 23	α Coronæ Borealis.	58,7	14,0	28,8	44,2	59,3	14,4	15 . 28 . 29,5		15 . 27 . 44,13	C.
	α Serpentis	33,7	47,3	0,8	14,5	28,1	41,6	15 . 36 . 55,2		15 . 36 . 14,46	C.
	Mars 1 L.	28,3	43,4	58,2	13,6	28,5	43,6	18 . 19 . 58,5		18 . 19 . 13,44	C.
	δ Ursæ Minoris ...	11. 0,1	14.48,4	......	22.23,4	26.10,8	29.55,5	18 . 33 . 42,2	– 38,23	18 . 22 . 21,84	C.
	(l) ∗ N.P.D. 79°. 34′.	37,9	51,7	5,2	19,1	32,8	46,4	18 . 43 . 0,1		18 . 42 . 19,03	C.
	∗ N.P.D. 66°. 52′.	5,1	19,7	34,2	49,2	3,8	18,4	18 . 57 . 33,1		18 . 56 . 49,07	C.
	(m) Σ 2489. *sf*.	16,8	30,7	44,3	58,4	12,3	26,3	19 . 9 . 40,1		19 . 8 . 58,42	C.
	α Aquilæ	9,7	23,6	36,9	50,7	4,4	17,8	19 . 43 . 31,4		19 . 42 . 50,64	C.
	β Aquilæ	38,6	52,2	5,7	19,3	33,1	46,6	19 . 48 . 0,0		19 . 47 . 19,36	C.
	α^2 Capricorni	22,6	36,6	50,2	4,2	17,9	31,6	20 . 9 . 45,5		20 . 9 . 4,09	C
	(n) Juno	8,3	22,0	35,6	49,4	3,1	16,5	21 . 3 . 30,4		21 . 2 . 49,33	C.
	Σ 2781. *np*.	24,2	37,8	51,2	5,0	18,6	32,1	21 . 8 . 45,8		21 . 8 . 4,96	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Cloudy. (b) Not good. (c) Hurried at first. Wire IV. was written down confusedly 12,2. Exceedingly faint and doubtful. (d) Too late for Wire I. (e) Bad lamp-light; wires scarcely seen. (f) Excessively faint. (g) At Wire I. a cloud of smoke from the kitchen chimney evidently disturbed the star. Cloudy at Wire VII. (h) Hurried. (i) Wire III. was written down 0,2. (k) Delayed by mistaking a preceding star for Juno. (l) Pretty good. (m) This was called Σ 2490. The apparent R.A. and the noted relative positions of the stars accord with Σ 2489. (n) Faint.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	− 0,29	+ 3,60	23,91			0,64	15,20	18 . 42 . 39,61	− 3,37	✱ N.P.D. 79°. 34′.
			55,61	11,21	15,60			19 . 43 . 11,34	− 3,77	α Aquilæ.
			24,26	39,91	15,65			19 . 47 . 39,99	− 3,82	β Aquilæ.
			45,11					21 . 5 . 0,87		Juno.
			9,76					21 . 8 . 25,52	− 4,41	Σ 2781.
			27,54					21 . 10 . 43,31	− 4,40	✱ N.P.D. 97°. 48′.
			6,08	21,85	15,77			21 . 23 . 21,85	− 4,40	β Aquarii.
			24,23					21 . 43 . 40,01	− 4,15	✱ N.P.D. 71°. 28′.
			31,66	47,54	15,88			21 . 57 . 47,45	− 4,40	α Aquarii.
			21,41			0,69	16,63	6 . 44 . 38,23		☽ 2 L.
			57,82					11 . 41 . 14,79		☉'s center.
			15,00	32,06	17,06			14 . 8 . 32,04	− 1,87	Arcturus.
			52,48	9,63	17,15			14 . 38 . 9,53	− 1,79	ε Bootis.
			15,13	32,17	17,04			17 . 7 . 32,25	− 2,72	α Herculis.
			54,00	11,18	17,18			19 . 43 . 11,20	− 3,74	α Aquilæ.
			22,70	39,38	17,18			19 . 47 . 39,90	− 3,79	β Aquilæ.
		+ 4,70	7,21			0,64	17,93	11 . 48 . 25,45		☉'s center.
			13,76	32,04	18,28			14 . 8 . 32,07	− 1,85	Arcturus.
			32,49	50,87	18,38			16 . 19 . 50,85	− 3,38	Antares.
			7,00					21 . 8 . 25,49	− 4,37	Σ 2781. *np.*
			24,79					21 . 10 . 43,28	− 4,37	✱ N.P.D. 97°. 48′.
			3,38	21,82	18,44			21 . 23 . 21,88	− 4,37	β Aquarii.
			3,08	21,72	18,64		18,57	0 . 0 . 21,65	− 4,67	α Andromedæ.
			21,80	39,91	18,11	0,62	18,59	18 . 22 . 40,55	+ 17,61	δ Ursæ Minoris.
			42,08					11 . 52 . 0,98		☉'s center.
			44,38	2,12	17,74			1 . 4 . 3,31	− 61,83	Polaris SP.
			13,06	32,04	18,98			14 . 8 . 32,01	− 1,85	Arcturus.
			2,45	21,73	19,28		19,21	0 . 0 . 21,66	− 4,68	α Andromedæ.
			44,06	2,22	18,16			1 . 4 . 3,30	− 61,93	Polaris.
			49,76	8,96	19,20			2 . 54 . 9,04	− 4,21	α Ceti.
			17,17			0,56	19,24	11 . 55 . 36,69		☉'s center.
			43,74	2,33	18,59			1 . 4 . 3,28	− 62,04	Polaris SP.
			15,24	34,83	19,59			15 . 36 . 34,84	− 2,42	α Serpentis.
			32,32					18 . 15 . 51,99		Mars 1 L.
			51,46	11,12	19,66			19 . 43 . 11,16	− 3,68	α Aquilæ.
			20,13	39,82	19,69			19 . 47 . 39,83	− 3,73	β Aquilæ.
			0,97					21 . 3 . 20,70		Juno.
			2,01	21,80	19,79			21 . 23 . 21,75	− 4,35	β Aquarii.
			1,89	21,73	19,84			0 . 0 . 21,69	− 4,68	α Andromedæ.
			44,31	4,39	20,08	0,48	19,79	15 . 28 . 4,41	− 1,85	α Coronæ Borealis.
			14,72	34,82	20,10			15 . 36 . 34,82	− 2,41	α Serpentis.
			13,83					18 . 19 . 33,99		Mars 1 L.
			19,21	38,92	19,71			18 . 22 . 39,37	+ 18,60	δ Ursæ Minoris.
			19,28					18 . 42 . 39,44	− 3,25	✱ N.P.D. 79°. 34′.
			49,27					18 . 57 . 9,44	− 3,02	✱ N.P.D. 66°. 52′.
			58,64					19 . 9 . 18,81	− 3,31	Σ 2489. *sf.*
			50,89	11,10	20,21			19 . 43 . 11,07	− 3,66	α Aquilæ.
			19,62	39,80	20,18			19 . 47 . 39,81	− 3,71	β Aquilæ.
			4,41	24,59	20,18			20 . 9 . 24,60	− 4,24	α^2 Capricorni.
			49,64					21 . 3 . 9,85		Juno.
			5,27					21 . 8 . 25,48	− 4,34	Σ 2781. *np.*

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Sept. 23	(a) ⚹ N.P.D. 97°.48′.	......	55,7	9,1	23,0	36,4	50,0	21 . 11 . 3,4	– 6,80	21 . 10 . 22,80	C.
	β Aquarii........	20,7	34,1	47,5	1,4	14,9	28,4	21 . 23 . 41,9		21 . 23 . 1,27	C.
Sept. 26	(b) ☉ 1 L............	......	......	......	35,2	48,5	2,0	12 . 9 . 15,4	– 20,28	12 . 8 . 35,00	C.
	☉ 2 L............	2,6	16,2	29,5	43,3	56,8	10,2	12 . 11 . 23,5		12 . 10 . 43,16	C.
	Mars 1 L.........	38,2	53,5	8,3	23,6	38,6	......	18 . 26	+ 15,03	18 . 26 . 23,47	G
	α Aquilæ.........	9,0	22,7	36,0	49,7	3,6	17,0	19 . 43 . 30,6		19 . 42 . 49,80	G.
	β Aquilæ.........	38,0	51,4	4,9	18,6	32,0	45,5	19 . 47 . 59,0		19 . 47 . 18,49	G.
	(c) Juno............	......	......	......	26,7	40,3	53,6	21 . 3 . 7,3	– 20,58	21 . 2 . 26,40	C.
	β Aquarii........	......	......	46,6	0,4	13,9	27,3	21 . 23 . 41,0	– 13,54	21 . 23 . 0,30	G.
Sept. 27	(d) ☉ 1 L............	30,8	44,4	57,7	11,4	25,0	38,3	12 . 12 . 51,8		12 . 12 . 11,34	C.
	(d) ☉ 2 L............	39,1	52,6	6,0	19,7	33,1	46,5	12 . 15 . 0,0		12 . 14 . 19,58	C.
	(e) Σ 2489. sf.	16,1	30,0	43,3	57,3	11,4	25,2	19 . 9 . 39,1		19 . 8 . 57,49	C.
	(f) α Aquilæ	9,0	22,7	35,9	50,1	3,5	17,1	19 . 43 . 30,4		19 . 42 . 49,81	C.
	β Aquilæ	37,8	51,4	4,8	18,5	32,1	45,6	19 . 47 . 59,1		19 . 47 . 18,47	C.
	α^2 Capricorni	21,7	35,6	49,2	3,0	17,2	30,9	20 . 9 . 44,7		20 . 9 . 3,18	C.
	(g) Juno.............	41,7	55,4	9,0	22,8	36,5	50,1	21 . 3 . 3,8		21 . 2 . 22,76	C.
	Σ 2781. np........	23,2	36,8	50,1	4,2	17,8	31,4	21 . 8 . 45,0		21 . 8 . 4,07	C.
	(a) ⚹ N.P.D. 97°. 48′.	......	54,8	8,1	22,0	35,6	49,2	21 . 11 . 2,7	– 6,80	21 . 10 . 21,93	C.
	β Aquarii	19,8	33,4	46,8	0,5	14,1	27,5	21 . 23 . 41,0		21 . 23 . 0,44	C.
	(h) α Andromedæ....	14,7	30,2	45,2	0,7	16,0	31,2	0 . 0 . 46,4		0 . 0 . 0,63	C.
	(i) Regulus..........	0,3	14,0	27,7	41,6	55,5	9,2	10 . 0 . 23,0		9 . 59 . 41,61	C.
Sept. 28	☉ 1 L............	7,4	20,9	34,3	47,9	1,5	15,0	12 . 16 . 28,5		12 . 15 . 47,93	C.
	☉ 2 L............	15,8	29,2	42,6	56,3	9,9	23,2	12 . 18 . 36,7		12 . 17 . 56,24	C.
	Polaris SP.	38.13,2	46.42,4	55. 7,0	3.31,8	......	......	13	+ 12 . 42,25	13 . 3 . 35,85	G.
	(k) α Serpentis	33,0	46,4	0,0	13,7	27,3	40,8	15 . 36 . 54,2		15 . 36 . 13,63	C.
	Antares...........	44,4	59,5	14,2	29,6	44,5	59,3	16 . 20 . 14,2		16 . 19 . 29,39	C.
	☽ 1 L..............	1,5	16,6	31,8	47,2	2,5	17,7	16 . 33 . 32,9		16 . 32 . 47,17	C.
	α Herculis........	29,2	43,1	57,0	11,1	25,1	38,8	17 . 7 . 52,7		17 . 7 . 11,00	C.
	(l) θ Ophiuchi	20,2	35,0	49,6	4,5	19,4	34,1	17 . 12 . 49,0		17 . 12 . 4,54	C.
	(k) Mars 1 L.........	9,9	25,0	39,7	55,2	10,4	25,0	18 . 32 . 40,2		18 . 31 . 55,06	C.
	α Andromedæ....	15,1	30,3	45,4	0,9	16,2	31,2	0 . 0 . 46,6		0 . 0 . 0,81	C.
	Polaris	38.32,4	46.59,0	......	3.55,7	12.22,3	20.48,5	1 . 29 . 14,8	– 1 . 25,33	1 . 3 . 53,45	C.
	Regulus..........	0,2	14,2	27,9	41,8	55,6	9,3	10 . 0 . 23,1		9 . 59 . 41,73	C.
	(m) β Leonis.........	2,0	16,0	30,1	44,1	57,9	11,9	11 . 41 . 26,0		11 . 40 . 44,00	C.
Sept. 29	(n) ☉ 1 L.	44,3	57,9	11,1	25,0	38,2	51,8	12 . 20 . 5,2		12 . 19 . 24,79	C.
	(n) ☉ 2 L.	52,8	6,0	19,4	33,2	46,9	0,3	12 . 22 . 13,7		12 . 21 . 33,18	C.
	Polaris SP.	38.18,6	46.45,0	55.10,6	......	12.12,8	20.34,0	13 . 29 . 1,6	– 0,42	13 . 3 . 40,01	G.
	(k) Arcturus..........	......	......	......	11,0	25,3	39,6	14 . 8 . 54,0	– 21,54	14 . 8 . 10,93	C.
	α Herculis........	29,3	43,2	57,0	11,2	25,1	38,9	17 . 7 . 52,8		17 . 7 . 11,07	C.
	☽ 1 L............	23,8	39,0	54,1	9,5	24,8	40,0	17 . 36 . 55,3		17 . 36 . 9,50	C.
	(o) Mars 1 L.........	......	......	26,8	42,3	57,2	12,1	18 . 35 . 27,0	– 15,00	18 . 34 . 42,08	C.
Oct. 1	(p) α Aquilæ	......	22,6	35,9	49,8	3,4	16,9	19 . 43 . 30,5	– 6,81	19 . 42 . 49,71	G.
	(q) β Aquilæ	37,5	51,4	4,8	18,4	32,0	45,4	19 . 47 . 58,9		19 . 47 . 18,35	G.
	β Aquarii	......	......	46,5	0,4	14,0	27,3	21 . 23 . 40,9	– 13,54	21 . 23 . 0,28	G.
Oct. 2	☉ 1 L.	34,8	48,5	1,7	15,6	29,1	42,4	12 . 30 . 56,1		12 . 30 . 15,46	C.
	☉ 2 L.	43,5	57,0	9,3	23,1	36,7	50,1	12 . 33 . 3,7		12 . 32 . 23,34	C.
	α Aquilæ	8,6	21,9	35,4	49,1	2,9	16,4	19 . 43 . 30,0		19 . 42 . 49,19	G.
	β Aquilæ	37,3	51,0	4,4	18,1	31,7	45,1	19 . 47 . 58,6		19 . 47 . 18,03	G.
	α^2 Capricorni	21,3	35,0	48,8	2,7	16,6	30,2	20 . 9 . 44,1		20 . 9 . 2,67	G.
	β^2 Capricorni	11,8	25,7	39,6	53,7	7,6	21,3	20 . 12 . 35,4		20 . 11 . 53,58	G.
	☽ 1 L.	51,4	5,8	20,1	34,7	49,1	3,4	20 . 28 . 17,8		20 . 27 . 34,61	G.
	ν Aquarii	3,6	17,2	30,6	44,8	58,3	12,1	21 . 1 . 26,1		21 . 0 . 44,67	G.
	β Aquarii	19,1	32,6	46,3	0,0	13,5	27,0	21 . 23 . 40,5		21 . 22 . 59,85	G.
	α Aquarii	45,1	58,8	12,0	25,6	39,0	52,7	21 . 58 . 6,0		21 . 57 . 25,60	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(a) Too soon after the preceding observation. (b) Cloud. Fall of Temperature since Sept. 23 of about 10°. (c) Extremely faint. The first three wires were rejected as being very discordant. (d) Through thin cloud: well-defined and pretty steady. (e) Hurried and unsatisfactory, except the last four wires. (f) Not good: the next observation was more satisfactory. (g) Pretty good. (h) Bad lamp-light. (i) Unsteady. (k) Cloudy. (l) Excessively faint. (m) The Sun had been shining on the West Pier. (n) Disturbed at Wire III. of ☽ L., which was written down 12,1. Not a satisfactory observation. (o) Hurried and cloudy. (p) A rise of Temperature on this day. (q) Disturbed by a carriage passing.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	- 0,29	+ 4,70	23,11			0,48	19,79	21 . 10 . 43,32	- 4,34	✻ N.P.D. 97°. 48′.
			1,57	21,80	20,23			21 . 23 . 21,79	- 4,35	β Aquarii.
	- 1,55	+ 4,37	} 39,30			0,05	21,09	12 . 10 . 0,42		⊙'s center.
			23,82					18 . 26 . 44,95		Mars 1 L.
			49,97	11,05	21,08			19 . 43 . 11,10	- 3,61	α Aquilæ.
			18,67	39,76	21,09			19 . 47 . 39,80	- 3,67	β Aquilæ.
			26,66					21 . 2 . 47,79		Juno.
			0,54	21,77	21,23			21 . 23 . 21,67	- 4,32	β Aquarii.
			} 15,68			0,10	21,16	12 . 13 . 36,79		⊙'s center.
			57,64					19 . 9 . 18,72	- 3,24	Σ 2489. *sf.*
			49,98	11,04	21,06			19 . 43 . 11,06	- 3,60	α Aquilæ.
			18,65	39,75	21,10			19 . 47 . 39,73	- 3,66	β Aquilæ.
			3,45	24,53	21,08			20 . 9 . 24,53	- 4,18	α^2 Capricorni.
			23,02					21 . 2 . 44,09		Juno.
			4,32					21 . 8 . 25,39	- 4,30	Σ 2781. *np.*
			22,18					21 . 10 . 43,25	- 4,30	✻ N.P.D. 97°. 48′.
			0,68	21,76	21,08			21 . 23 . 21,75	- 4,31	β Aquarii.
			0,71	21,76	21,05			0 . 0 . 21,77	- 4,71	α Andromedæ.
			41,76	2,77	21,01	- 0,16	21,05	10 . 0 . 2,74	- 2,43	Regulus.
			} 52,31					12 . 17 . 13,28		⊙'s center.
			44,41	4,15	19,74			13 . 4 . 5,37	- 63,86	Polaris SP.
			13,81	34,75	20,94			15 . 36 . 34,76	- 2,34	α Serpentis.
			29,74	50,74	21,00			16 . 19 . 50,68	- 3,25	Antares.
			47,50					16 . 33 8,44		☽ 1 L.
			11,13	31,99	20,86			17 . 7 . 32,07	- 2,54	α Herculis.
			4,89					17 . 12 . 25,83	- 3,55	θ Ophiuchi.
			55,41					18 . 32 . 16,34		Mars 1 L.
			0,89	21,77	20,88		20,89	0 . 0 . 21,78	- 4,72	α Andromedæ.
			45,22	4,31	19,09			1 . 4 . 6,10	- 64,02	Polaris.
	- 0,25		41,95	2,79	20,84	- 0,17	20,88	10 . 0 . 2,76	- 2,45	Regulus.
			44,21	4,97	20,76			11 . 41 . 5,01	- 2,06	β Leonis.
			} 29,26					12 . 20 . 50,05		⊙'s center.
			46,05	4,46	18,41			1 . 4 . 6,84	- 64,17	Polaris SP.
			11,12	31,97	20,85			14 . 8 . 31,90	- 1,78	Arcturus.
			11,28	31,97	20,69			17 . 7 . 32,04	- 2,52	α Herculis.
			9,86					17 . 36 . 30,62		☽ 1 L.
			42,45					18 . 35 . 3,20		Mars 1 L.
			49,95	10,97	21,02	+ 0,32	20,82	19 . 43 . 11,03	- 3,53	α Aquilæ.
			18,59	39,68	21,09			19 . 47 . 39,67	- 3,59	β Aquilæ.
			0,56	21,72	21,16			21 . 23 . 21,66	- 4,27	β Aquarii.
			} 19,67			+ 0,42	21,15	12 . 31 . 41,04		⊙'s center.
			49,43	10,96	21,53			19 . 43 . 10,92	- 3,52	α Aquilæ.
			18,27	39,66	21,39			19 . 47 . 39,77	- 3,57	β Aquilæ.
			2,97	24,46	21,49			20 . 9 . 24,47	- 4,11	α^2 Capricorni.
			53,89					20 . 12 . 15,39	- 4,17	β^2 Capricorni.
			34,93					20 . 27 . 56,44		☽ 1 L.
			44,97					21 . 1 . 6,49	- 4,29	ν Aquarii.
			0,13	21,71	21,58			21 . 23 . 21,65	- 4,26	β Aquarii.
			25,87	47,43	21,56			21 . 57 . 47,40	- 4,29	α Aquarii.

Sept. 26. 2^h, and Oct. 2. 1^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Oct. 4	(a) α Aquilæ.........	7,7	21,1	34,7	48,5	2,1	15,5	19 . 43 . 29,1		19 . 42 . 48,39	G.
	β Aquilæ.........	......	50,1	3,4	17,2	30,8	44,2	19 . 47 . 57,8	– 6,77	19 . 47 . 17,15	G.
	β Aquarii........	18,6	32,0	45,4	59,2	12,8	26,1	21 . 23 . 39,8		21 . 22 . 59,13	G.
	☽ 1 L	50,3	4,2	18,0	32,0	46,0	0,0	22 . 6 . 13,8		22 . 5 . 32,04	G.
	γ Aquarii.........	34,1	47,7	1,0	14.6	28,0	41,4	22 . 13 . 55,0		22 . 13 . 14,54	G.
	η Aquarii.........	18,8	32,1	45,5	59,1	12,8	26,0	22 . 27 . 39,4		22 . 26 . 59,10	G.
	α Pegasi	56,9	10,9	24,3	38,5	52,3	6,4	22 . 57 . 20,1		22 . 56 . 38,49	G.
Oct. 5	β Aquarii.........	18,0	31,4	45,0	58,7	12,1	25,7	21 . 23 . 39,1		21 . 22 . 58,57	G.
	α Aquarii.........	44,0	57,3	10,8	24,6	38,0	51,3	21 . 58 . 4,8		21 . 57 . 24,40	G.
	γ Aquarii.........	33,8	47,1	0,4	14,1	27,4	41,0	22 . 13 . 54,4		22 . 13 . 14,03	G.
	(b) ☽ 1 L............	55,9	9,8	23,3	37,1	51,0	4,9	22 . 52 . 18,6		22 . 51 . 37,23	G.
	(b) α Pegasi.........	......	......	24,1	38,1	52,1	6,0	22 . 57 . 19,9	– 13,89	22 . 56 . 38,15	G.
	κ^1 Piscium........	54,1	7,6	21,0	34,8	48,2	1,5	23 . 19 . 15,0		23 . 18 . 34,60	G.
	α Andromedæ....	12,9	28,0	43,4	58,8	14,1	29,3	0 . 0 . 44,4		23 . 59 . 58,70	G.
	Polaris............	38.26,6	46.54,0	55.13,2	3.49,6	12.17,0	20.42,8	1 . 29 . 12,6		1 . 3 . 47,97	G.
Oct. 6	Mars 1 L.........	40,8	55,8	10,6	25,8	40,6	......	18 . 54	+ 14,95	18 . 54 . 25,67	G.
	(c) Σ 2484...........	18,4	32,6	46,8	1,1	15,6	29,5	19 . 7 . 43,9		19 . 7 . 1,12	G.
	(d) Σ 2489...........	......	27,5	41,1	55,5	9,2	23,0	19 . 9 . 37,0	– 6,95	19 . 8 . 55,27	G.
	(b) β Aquilæ.	35,8	49,1	2,7	16,3	30,0	43,4	19 . 47 . 57,0		19 . 47 . 16,33	G.
Oct. 7	(e) ⊙ 1 L............	......	......	11,3	25,1	38,8	52,2	12 . 48	– 6,77	12 . 48 . 25,08	G.
	Polaris SP........	38.13,2	46.43,4	......	3.34,4	12.10,0	20.30,2	13.........	+ 3 . 23,18	13 . 3 . 37,42	G.
	(e) Arcturus.........	......	39,5	53,7	8,1	22,5	36,9	14 . 8	0,00	14 . 8 . 8,14	G.
	α Coronæ Borealis.	55,0	10,1	25,1	40,5	55,8	10,8	15 . 28 . 25,8		15 . 27 . 40,44	G.
	α Serpentis.......	30,0	43,8	57,1	11,0	24,6	37,9	15 . 36 . 51,6		15 . 36 . 10,85	G.
Oct. 9	(f) β Aquilæ.........	34,7	48,0	1,5	15,2	28,7	42,0	19 . 47 . 55,8		19 . 47 . 15,13	G.
	β Aquarii.........	16,5	30,0	43,3	57,0	10,4	24,1	21 . 23 . 37,7		21 . 22 . 57,00	G.
	α Aquarii.........	42,6	55,9	9,1	22,9	36,3	49,7	21 . 58 . 3,1		21 . 57 . 22,80	G.
	α Pegasi..........	54,8	8,9	22,7	36,7	50,8	4,3	22 . 57 . 18,3		22 . 56 . 36,64	G.
	(g) α Andromedæ.....	11,5	26,9	42,0	57,4	12,8	27,9	0 . 0 . 43,3		23 . 59 . 57,40	G.
	(h) Polaris............	38.29,8	47. 0,0	......	3.54,0	12.23,2	20.47,0	1 . 29 . 17,8	– 1 . 25,40	1 . 3 . 53,23	G.
	η Piscium.........	4,0	18,0	31,8	45,9	59,8	13,7	1 . 23 . 27,4		1 . 22 . 45,80	G.
	β Arietis.........	56,1	10,7	24,7	39,1	53,6	7,9	1 . 46 . 22,1		1 . 45 . 39,18	G.
	☽ 2 L............	34,1	48,4	2,3	17,1	31,4	45,8	1 . 59 . 0,0		1 . 58 . 17,02	G.
	θ^1 Arietis	21,9	36,1	50,3	4,8	19,0	33,1	2 . 9 . 47,3		2 . 9 . 4,64	G.
	ν Arietis..........	52,0	6,2	20,6	35,2	49,8	4,1	2 . 30 . 18,5		2 . 29 . 35,20	G.
Oct. 10	(i) ⊙ 1 L............	43,0	56,7	10,1	24,0	37,6	51,0	13 . 0 . 4,7		12 . 59 . 23,87	G.
	(i) ⊙ 2 L............	52,6	6,1	19,6	33,4	46,9	0,4	13 . 2 . 14,0		13 . 1 . 33,28	G.
Oct. 12	β Aquarii.	16,2	29,7	43,2	56,8	10,4	24,0	21 . 23 . 37,4		21 . 22 . 56,82	G.
	α Aquarii.........	......	55,6	9,0	22,6	36,1	49,4	21 . 58 . 3,1	– 6,74	21 . 57 . 22,56	G.
	α Pegasi	54,8	8,7	22,4	36,4	50,5	4,2	22 . 57 . 18,1		22 . 56 . 36,44	G.
	Regulus	57,1	11,0	24,4	38,7	52,3	6,1	10 . 0 . 20,0		9 . 59 . 38,52	C.
	Polaris SP........	38. 8,0	46.36,8	55. 1,6	3.29,8	......	20.28,0	13 . 28 . 57,2	+ 1 . 25,42	13 . 3 . 32,32	G.
Oct. 13	⊙ 1 L.	46,4	0,0	13,3	27,5	40,9	54,6	13 . 11 . 8,1		13 . 10 . 27,26	C.
	⊙ 2 L.	56,4	10,1	23,4	37,3	51,0	4,3	13 . 13 . 18,0		13 . 12 . 37,22	C.
	(b) α Ophiuchi.......	35,5	49,4	3,0	16,8	30,7	......	17 . 27	+ 13,80	17 . 27 . 16,88	C.
	(k) Mars 1 L.........	49,7	4,5	19,1	34,3	48,8	3,8	19 . 15 . 18,7		19 . 14 . 34,13	C.
	α Aquilæ.........	5,4	18,8	32,4	46,1	59,8	13,3	19 . 43 . 27,0		19 . 42 . 46,11	C.
	(b) β Aquilæ.	34,3	47,7	1,2	......	28,3	......	19 . 47 . 55,5	+ 5,43	19 . 47 . 14,83	C.
	α^2 Capricorni.....	18,2	31,7	45,6	59,7	13,5	27,1	20 . 9 . 41,0		20 . 8 . 59,55	C.
	✱ N.P.D. 99°. 59′.	17,1	30,8	44,3	58,2	12,0	25,5	21 . 2 . 39,2		21 . 1 . 58,16	C.
	(l) Juno..............	......	......	4,4	18,6	32,4	46,1	21 . 6 . 0,0	– 13,79	21 . 5 . 18,51	C.
	(m) β Aquarii.........	16,1	29,7	43,1	57,0	10,4	24,0	21 . 23 . 37,4		21 . 22 . 56,82	C.
	(n) Regulus..........	......	11,0	24,7	38,6	52,5	6,2	10 . 0 . 20,0	– 6,91	9 . 59 . 38,59	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Sometimes faint from clouds. (*b*) Cloudy. (*c*) Seemed to be double, but observed as single. (*d*) The small star not seen. (*e*) Cloudy. Thermometer at noon of Oct. 7, 64°. (*f*) Thermometer, 46°. (*g*) Bad lamp-light. (*h*) Just before wire VI. the West setting-circle was accidentally struck, but not forcibly. (*i*) Much clouded, but the observation was satisfactory. (*k*) Bad definition. (*l*) Extremely faint. (*m*) Hurried: lamp-light also failing. (*n*) Not satisfactory.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	"	"	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	- 0,25	+ 3,86	48,60	10,92	22,32	0,45	21,93	19 . 43 . 10,90	- 3,48	α Aquilæ.
			17,36	39,63	22,27			19 . 47 . 39,66	- 3,54	β Aquilæ.
			59,38	21,68	22,30			21 . 23 . 21,71	- 4,23	β Aquarii.
			32,30					22 . 5 . 54,64		☽ 1 L.
			14,78					22 . 13 . 37,13	- 4,34	γ Aquarii.
			59,34					22 . 27 . 21,69	- 4,38	η Aquarii.
			38,69	1,07	22,38			22 . 57 . 1,05	- 4,38	α Pegasi.
			58,82	21,67	22,85	0,47	22,38	21 . 23 . 21,62	- 4,22	β Aquarii.
			24,64	47,41	22,77			21 . 57 . 47,45	- 4,27	α Aquarii.
			14,27					22 . 13 . 37,08	- 4,34	γ Aquarii.
			37,47					22 . 52 . 0,30		☽ 1 L.
			38,35	1,07	22,72			22 . 57 . 1,18	- 4,38	α Pegasi.
			34,83					23 . 18 . 57,67	- 4,50	κ¹ Piscium.
			58,85	21,78	22,93		22,85	0 . 0 . 21,70	- 4,73	α Andromedæ.
			43,11	5,32	22,21			1 . 4 . 5,98	- 65,03	Polaris.
			26,00			0,48	22,65	18 . 54 . 49,03		Mars 1 L.
			1,30					19 . 7 . 24,33	- 2,94	Σ 2484.
			55,47					19 . 9 . 18,50	- 3,07	Σ 2489.
			16,55	39,59	23,04					β Aquilæ.
			25,33			0,50	23,29	12 . 48 . 48,89		⊙ 1 L.
			42,65	5,46	22,81			1 . 4 . 6,21	- 65,17	Polaris SP.
			8,31	31,94	23,63			14 . 8 . 31,89	- 1,75	Arcturus.
			40,59	4,18	23,59			15 . 28 . 4,20	- 1,64	α Coronæ Borealis.
			11,07	34,65	23,58			15 . 36 . 34,69	- 2,24	α Serpentis.
	- 1,36	+ 5,22	15,36	39,54	24,18	0,19	24,09	19 . 47 . 39,61	- 3,45	β Aquilæ.
			57,29	21,63	24,34			21 . 23 . 21,55	- 4,18	β Aquarii.
			23,07	47,37	24,30			21 . 57 . 47,33	- 4,23	α Aquarii.
			36,83	-1,04	24,21			22 . 57 . 1,10	- 4,35	α Pegasi.
			57,52	21,79	24,27		24,28	0 . 0 . 21,80	- 4,74	α Andromedæ.
			44,12	5,79	21,67			1 . 4 . 8,41	- 65,50	Polaris.
			45,99					1 . 23 . 10,28	- 4,81	η Piscium.
			39,34					1 . 46 . 3,63	- 4,94	β Arietis.
			17,19					1 . 58 . 41,49		☽ 2 L.
			4,80					2 . 9 . 29,10	- 4,93	θ¹ Arietis.
			35,35					2 . 29 . 59,65	- 4,98	ν Arietis.
			} 28,87					13 . 0 . 53,25		⊙'s center.
		+ 6,02	57,16	21,58	24,42	0,04	24,37	21 . 23 . 21,57	- 4,13	β Aquarii.
			22,88	47,34	24,46			21 . 57 . 47,29	- 4,20	α Aquarii.
			36,67	1,03	24,36			22 . 57 . 1,08	- 4,34	α Pegasi.
			38,75	3,10	24,35	0,03	24,36	10 . 0 . 3,12	- 2,76	Regulus.
			43 12	6,35	23,23			1 . 4 . 7,50	- 66,06	Polaris SP.
			{ 32,59					13 . 11 . 56,97		⊙'s center.
			17,11	41,46	24,35			17 . 27 . 41,49	- 2,44	α Ophiuchi.
			34,59					19 . 14 . 58,97		Mars 1 L.
			46,36	10,77	24,41			19 . 43 . 10,74	- 3,33	α Aquilæ.
			15,10	39,48	24,38			19 . 47 . 39,48	- 3,39	β Aquilæ.
			59,92	24,29	24,37			20 . 9 . 24,31	- 3,94	α² Capricorni.
			58,52					21 . 2 . 22,91	- 4,10	⁎ N.P.D. 99°. 59′.
			18,88					21 . 5 . 43,27		Juno.
			57,16	21,57	24,41			21 . 23 . 21,55	- 4,12	β Aquarii.
			38,82	3,12	24,30	0,00	24,37	10 . 0 . 3,19	- 2,78	Regulus.

Oct. 13. 3h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Oct. 14	⊙ 1 L.	28,7	42,2	55,9	9,7	23,4	36,6	13 . 14 . 50,3		13 . 14 . 9,55	C.
	⊙ 2 L.	38,8	52,3	5,8	19,6	33,3	47,0	13 . 17 . 0,5		13 . 16 . 19,62	C.
	Arcturus..........	24,3	38,7	52,9	7,3	21,7	35,9	14 . 8 . 50,1		14 . 8 . 7,27	C.
	α Coronæ Borealis.	54,1	9,2	24,5	39,7	54,8	10,0	15 . 28 . 25,1		15 . 27 . 39,63	C.
	Polaris..........	38.28,0	46.57,8	......	3.57,6	12.21,8	20.49,4	1 . 29 . 15,6	– 1 . 25,43	1 . 3 . 52,94	G.
Oct. 15	β Leonis..........	58,8	12,7	26,5	40,7	54,6	8,3	11 . 41 . 22,3		11 . 40 . 40,55	C.
	(a) Polaris SP........	......	46.39,6	55. 3,4	3.31,2	12. 7,2	......	13 . 29 . 3,0	– 1 . 45,52	13 . 3 . 31,36	G.
Oct. 16	⊙ 1 L.	......	8,6	21,8	35,9	49,4	3,0	13 . 22 . 16,8	– 6,83	13 . 21 . 35,75	C.
	⊙ 2 L.	5,1	18,8	32,3	46,2	0,0	13,5	13 . 24 . 27,1		13 . 23 . 46,14	C.
	Arcturus..........	24,2	38,7	52,7	7,3	21,7	36,0	14 . 8 . 50,3		14 . 8 . 7,27	C.
	(b) Mars 1 L.	33,6	48,6	2,9	18,0	32,8	47,7	19 . 24 . 2,4		19 . 23 . 18,00	C.
	(c) α Aquilæ..........	5,1	18,7	32,2	46,0	59,7	13,2	19 . 43 . 26,7		19 . 42 . 45,94	C.
	β Aquilæ..........	34,2	47,7	1,0	14,8	28,4	41,9	19 . 47 . 55,6		19 . 47 . 14,80	C.
	α^2 Capricorni......	18,2	32,1	45,7	59,6	13,3	27,0	20 . 9 . 40,9		20 . 8 . 59,55	C.
	(c) ✱ N.P.D. 99°. 59′.	17,1	30,8	44,2	58,1	12,0	25,5	21 . 2 . 39,1		21 . 1 . 58,12	C.
	(d) Juno............	59,3	13,2	27,1	......	......	......	21 . 7 . 22,3	+ 10,39	21 . 6 . 40,86	C.
	(c) β Aquarii.........	16,2	30,0	43,1	57,0	10,5	23,9	21 . 23 . 37,6		21 . 22 . 56,90	C.
Oct. 17	α^2 Cancri..........	51,4	5,2	18,7	32,7	46,6	0,2	8 . 50 . 14,1		8 . 49 . 32,70	C.
	(e) ☽ 2 L..............	55,9	10,1	24,0	38,3	52,5	6,4	9 . 8 . 20,7		9 . 7 . 38,28	C.
	α Hydræ..........	49,8	3,6	16,7	30,7	44,2	57,8	9 . 20 . 11,2		9 . 19 . 30,57	C.
	14 Leonis.........	43,6	57,2	10,8	24,7	38,5	52,0	9 . 33 . 5,7		9 . 32 . 24,64	C.
	Regulus	57,4	11,3	25,0	39,0	52,8	6,5	10 . 0 . 20,2		9 . 59 . 38,89	C.
	β Leonis..........	59,0	13,0	26,7	41,0	55,1	8,9	11 . 41 . 22,7		11 . 40 . 40,91	C.
Oct. 18	⊙ 1 L.	23,7	37,4	50,8	4,8	18,5	32,0	13 . 29 . 45,8		13 . 29 . 4,71	C.
	⊙ 2 L.	34,4	48,1	1,7	15,6	29,2	42,9	13 . 31 . 56,7		13 . 31 . 15,51	C.
	Mars 1 L.	24,7	39,5	54,2	9,0	23,8	38,7	19 . 29 . 53,4		19 . 29 . 9,05	C.
	α Aquilæ..........	5,6	19,0	32,7	46,5	0,2	13,6	19 . 43 . 27,2		19 . 42 . 46,40	C.
	β Aquilæ..........	34,7	48,2	1,6	15,3	28,8	42,1	19 . 47 . 55,7		19 . 47 . 15,20	C.
	α^2 Capricorni......	18,6	32,2	46,0	59,9	13,8	27,5	20 . 9 . 41,3		20 . 8 . 59,90	C.
	✱ N.P.D. 100°. 50′.	13,6	27,4	41,0	54,9	8,7	22,1	21 . 2 . 36,0		21 . 1 . 54,81	C.
	α Hydræ..........	50,1	3,7	17,0	30,8	44,2	58,0	9 . 20 . 11,5		9 . 19 . 30,75	C.
	14 Leonis..........	43,8	57,5	11,1	25,0	38,7	52,1	9 . 33 . 6,0		9 . 32 . 24,89	C.
	Regulus..........	57,7	11,4	25,1	39,0	53,0	6,7	10 . 0 . 20,5		9 . 59 . 39,06	C.
	☽ 2 L.	23,4	37,2	51,0	5,1	19,0	32,8	10 . 2 . 46,8		10 . 2 . 5,04	C.
	(f) ρ Leonis.........	30,0	43,7	57,1	11,0	24,8	38,3	10 . 24 . 52,0		10 . 24 . 10,98	C.
	β Leonis..........	59,1	13,1	27,0	41,0	55,0	9,0	11 . 41 . 22,9		11 . 40 . 41,01	G.
	Polaris SP.........	38. 9,6	46.40,2	55. 4,2	3.30,4	12. 7,0	20.31,8	13 . 28 . 59,0		13 . 3 . 34,60	G.
Oct. 19	⊙ 1 L.	9,1	22,7	36,2	50,1	3,9	17,5	13 . 33 . 31,2		13 . 32 . 50,10	G.
	⊙ 2 L.	19,9	33,8	47,1	1,1	14,9	28,4	13 . 35 . 42,2		13 . 35 . 1,05	G.
	Arcturus..........	24,8	39,1	53,1	7,9	22,2	36,5	14 . 8 . 50,5		14 . 8 . 7,73	G.
	ε Bootis...........	59,8	14,8	29,9	45,4	0,6	15,7	14 . 38 . 30,7		14 . 37 . 45,27	G.
	Mars 1 L..........	20,6	35,4	50,0	4,8	19,7	34,5	19 . 32 . 49,2		19 . 32 . 4,89	C.
	α Aquilæ..........	5,8	19,4	32,8	46,7	0,2	13,8	19 . 43 . 27,2		19 . 42 . 46,56	G.
	β Aquilæ.........	34,6	48,1	1,8	15,2	28,9	42,1	19 . 47 . 55,9		19 . 47 . 15,23	G.
	Polaris............	38.27,8	47. 0,0	55.23,8	3.55,6	12.25,8	20.49,4	1 . 29 . 20,2		1 . 3 . 54,66	G.
	☽ 2 L.	24,2	38,0	51,8	5,9	19,7	33,5	10 . 57 . 47,2		10 . 57 . 5,76	G.
	Polaris SP.........	38. 7,8	46.37,2	55. 1,6	3.30,2	12. 4,8	20.26,0	13 . 28 . 54,8		13 . 3 . 31,77	G.
Oct. 20	⊙ 1 L.	55,1	8,8	22,2	36,0	49,9	3,6	13 . 37 . 17,3		13 . 36 . 36,13	C.
	⊙ 2 L.	6,1	19,8	33,4	47,3	1,1	14,7	13 . 39 . 28,5		13 . 38 . 47,27	C.
	α Aquarii..........	43,1	56,5	9,8	23,4	37,0	50,2	21 . 58 . 3,9		21 . 57 . 23,41	C.
	α Andromedæ......	12,1	27,5	42,6	58,2	13,4	28,7	0 . 0 . 44,0		23 . 59 . 58,07	C.
	Σ 24. *nf*...........	18,4	33,2	48,1	3,1	17,9	32,7	0 . 10 . 47,6		0 . 10 . 3,00	C.
	58 Piscium.......	50,4	4,0	17,6	31,7	45,3	59,0	0 . 39 . 12,7		0 . 38 . 31,53	C.
Oct. 21	⊙ 1 L.	41,7	55,4	9,0	22,8	36,7	50,5	13 . 41 . 4,1		13 . 40 . 22,88	C.
	⊙ 2 L.	53,0	6,7	20,2	34,3	48,0	1,6	13 . 43 . 15,3		13 . 42 . 34,16	C.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Very unsteady.
(*b*) Flaring and badly defined.
(*c*) Not satisfactory.
(*d*) Quite doubtful: wires lost from the extreme faintness of the Planet.
(*e*) Thermometer at 37°.
(*f*) Very faint.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	"	"	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	− 1,36	+ 6,02	14,93			0,00	24,37	13 . 15 . 39,30		☉'s center.
			7,46	31,92	24,46			14 . 8 . 31,83	− 1,73	Arcturus.
			39,78	4,12	24,34			15 . 28 . 4,15	− 1,58	α Coronæ Borealis.
			42,65	6,49	23,84			1 . 4 . 7,02	− 66,20	Polaris.
			40,76	5,19	24,43	− 0,14	24,49	11 . 41 . 5,18	− 2,28	β Leonis.
			42,16	6,51	24,35			1 . 4 . 6,57	− 66,22	Polaris SP.
			41,31					13 . 23 . 5,72		☉'s center.
			7,46	31,92	24,46			14 . 8 . 31,87	− 1,73	Arcturus.
			18,46					19 . 23 . 42,84		Mars 1 L.
			46,19	10,72	24,53			19 . 43 . 10,57	− 3,28	α Aquilæ.
			15,07	39,42	24,35			19 . 47 . 39,44	− 3,33	β Aquilæ.
			59,92	24,23	24,31			20 . 9 . 24,29	− 3,88	α² Capricorni.
			58,48					21 . 2 . 22,85	− 4,06	⁎ N.P.D. 99°. 59′.
			41,23					21 . 7 . 5,60		Juno.
			57,24	21,53	24,29			21 . 23 . 21,61	− 4,08	β Aquarii.
		+ 6,15	32,94			− 0,16	24,14	8 . 49 . 57,02	− 3,31	α² Cancri.
			38,52					9 . 8 . 2,60		☽ 2 L.
			30,92	55,12	24,20			9 . 19 . 55,00	− 2,78	α Hydræ.
			24,89					9 . 32 . 48,97	− 3,02	14 Leonis.
			39,13	3,22	24,09			10 . 0 . 3,20	− 2,88	Regulus.
			41,13	5,22	24,09			11 . 41 . 5,19	− 2,31	β Leonis.
			10,47					13 . 30 . 34,52		☉'s center.
			9,52					19 . 29 . 33,53		Mars 1 L.
			46,66	10,68	24,02			19 . 43 . 10,67	− 3,24	α Aquilæ.
			15,48	39,39	23,91			19 . 47 . 39,49	− 3,30	β Aquilæ.
			0,28	24,20	23,92			20 . 9 . 24,29	− 3,85	α² Capricorni.
			55,19					21 . 2 . 19,19	− 4,05	⁎N.P.D. 100°. 50′.
			31,10	55,15	24,05	− 0,20	24,07	9 . 19 . 55,09	− 2,81	α Hydræ.
			25,14					9 . 32 . 49,13	− 3,03	14 Leonis.
			39,30	3,24	23,94			10 . 0 . 3,29	− 2,90	Regulus.
			5,31					10 . 2 . 29,30		☽ 2 L.
			11,23					10 . 24 . 35,21	− 2,74	ρ Leonis.
			41,23	5,24	24,01			11 . 41 . 5,20	− 2,33	β Leonis.
			45,61	6,21	20,60			1 . 4 . 9,57	− 65,92	Polaris SP.
			55,95					13 . 34 . 19,91		☉'s center.
			7,92	31,93	24,01			14 . 8 . 31,87	− 1,74	Arcturus.
			45,42	9,37	23,95			14 . 38 . 9,37	− 1,53	ε Bootis.
			5,36					19 . 32 . 29,27		Mars 1 L.
			46,82	10,66	23,84			19 . 43 . 10,73	− 3,22	α Aquilæ.
			15,51	39,37	23,86			19 . 47 . 39,41	− 3,28	β Aquilæ.
			44,18	6,15	21,97		23,87	1 . 4 . 8,04	− 65,86	Polaris.
			6,06			− 0,17	23,69	10 . 57 . 29,67		☽ 2 L.
			42,78	6,08	23,30			1 . 4 . 6,38	− 65,79	Polaris SP.
			42,07					13 . 38 . 5,66		☉'s center.
			23,73	47,24	23,51					α Aquarii.
			58,22	21,77	23,55		23,52			α Andromedæ.
			3,17					0 . 10 . 26,69	− 4,74	Σ 24. *nf.*
			31,78					0 . 38 . 55,30	− 4,72	58 Piscium.
			28,90			0,01	23,53	13 . 41 . 52,44		☉'s center.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Oct. 21	(a) α Herculis	......	......	......	8,0	21,9	35,7	17. 7.49,6	−20,90	17. 7. 7,90	C.
	α Andromedæ	12,3	27,7	42,7	58,1	13,5	28,6	0. 0.43,8		23.59.58,10	C.
	38 Piscium. nf.	19,7	33,2	46,6	0,5	14,1	27,5	0. 9.41,2		0. 9. 0,40	C.
	(b) ⁎ N.P.D. 78°.20′	44,1	58,0	11,7	25,5	39,2	53,0	0.39. 6,7		0.38.25,46	C.
	Piazzi O. 208	22,0	35,7	49,2	3,2	17,0	30,8	0.43.44,2		0.43. 3,16	C.
	B.A.C. 258	55,0	9,0	22,7	36,6	50,3	4,1	0.48.18,0		0.47.36,53	C.
	(c) φ Piscium	11,3	26,0	40,6	55,7	10,2	25,0	1. 5.39,7		1. 4.55,50	C.
	42 Ceti	47,4	1,0	14,2	27,8	41,2	54,8	1.12. 8,2		1.11.27,80	C.
	α Arietis	17,9	32,3	46,7	1,7	16,4	30,8	1.58.45,3		1.58. 1,58	C.
	θ¹ Arietis	23,0	37,2	51,2	5,7	20,0	34,1	2. 9.48,2		2. 9. 5,63	C.
	α Ceti	5,4	18,7	32,2	45,9	59,1	12,6	2.54.26,1		2.53.45,71	C.
Oct. 26	Polaris SP	38. 7,8	46.37,4	55. 3,2	3. 30,4	12. 7,8	20.29,4	13.29. 0,0		13. 3.33,71	G.
Oct. 27	(d) ☉ 1 L.	34,8	48,7	2,7	16,5	30,2	44,0	14. 3.57,9		14. 3.16,40	C.
	(d) ☉ 2 L.	47,5	1,4	15,1	29,2	42,9	56,7	14. 6.10,5		14. 5.29,05	C.
	Arcturus	......	39,8	54,2	8,8	23,1	37,2	14. 8.51,6	−7,17	14. 8. 8,61	C.
Oct. 28	(e) Antares	......	......	......	27,1	42,0	57,1	16.20.12,0	−22,52	16.19.27,03	C.
	ο Sagittarii	13,1	27,8	42,1	56,8	11,2	25,6	18.55.40,0		18.54.56,66	C.
	(f) ☽ 1 L.	35,6	50,3	5,0	20,1	34,9	49,8	19.14. 4,6		19.13.20,04	C.
	e¹ Sagittarii	41,7	55,7	9,6	24,0	37,9	52,0	19.32. 5,9		19.31.23,83	C.
	(f) 57 Sagittarii	1,8	16,2	30,2	44,8	59,1	13,3	19.43.27,5		19.42.44,70	C.
	β Aquilæ	35,5	49,1	2,4	16,2	29,7	43,2	19.47.56,8		19.47.16,13	C.
	(g) Mars 1 L.	49,7	4,4	18,7	33,6	48,3	2,8	19.59.17,5		19.58.33,57	C.
	(g) α² Capricorni	19,3	33,0	46,8	0,8	14,6	28,4	20. 9.42,2		20. 9. 0,72	C.
	(h) ⁎ N.P.D. 100°.50′	14,7	28,4	42,0	55,8	9,6	23,3	21. 2.37,1		21. 1.55,84	C.
	(i) β Aquarii	17,6	31,1	44,4	58,3	11,8	25,3	21.23.38,8		21.22.58,19	C.
	Polaris	38.30,4	46.58,2	55.19,8	3.56,2	12.22,4	20.48,4	1.29.19,0		1. 3.53,49	G.
Nov. 3	(k) ☉ 1 L.	......	4,8	18,7	32,7	46,8	0,7	14.31.14,8	−6,99	14.30.32,76	C.
	(k) ☉ 2 L.	5,1	19,0	32,8	46,7	1,1	14,9	14.33.28,8		14.32.46,92	C.
	(k) α Herculis	......	......	55,0	8,9	23,0	36,7	17. 7.50,6	−13,91	17. 7. 8,93	C.
	α Aquilæ	7,0	20,6	34,0	47,7	1,5	15,0	19.43.28,6		19.42.47,77	C.
	β Aquilæ	36,0	49,4	2,9	16,3	30,1	43,5	19.47.57,1		19.47.16,47	C.
	α² Capricorni	19,8	33,7	47,2	1,1	15,2	29,0	20. 9.42,9		20. 9. 1,27	C.
	(f) Mars 1 L.	......	......	0,5	15,1	29,7	44,0	20.16.58,6	−14,53	20.16.15,05	C.
	α Pegasi	56,4	10,5	24,1	38,0	52,1	5,9	22.57.19,9		22.56.38,13	G.
	ι Piscium	53,8	7,3	20,9	34,2	48,0	1,4	23.32.14,9		23.31.34,36	G.
	(k) ω Piscium	16,2	29,9	43,3	......	......	24,0	23.51.37,6	+2,72	23.50.56,92	G.
	(k) α Andromedæ	13,1	28,3	43,8	59,1	14,6	29,8	0. 0.45,0		23.59.59,10	G.
	(l) ☽ 1 L.	41,8	55,5	9,1	23,0	37,1	50,9	0. 8. 4,7		0. 7.23,16	G.
	Polaris SP	38.14,0	46.45,4	55. 6,8	3.43,0	12.11,8	20.37,2	13.29. 8,0		13. 3.40,89	G.
	Arcturus	26,2	40,8	55,0	9,1	23,9	38,0	14. 8.52,3		14. 8. 9,33	G.
Nov. 4	☉ 1 L.	47,6	1,6	15,5	29,4	43,7	57,5	14.35.11,4		14.34.29,53	C.
	☉ 2 L.	1,8	15,8	29,9	43,7	58,0	11,8	14.37.25,7		14.36.43,81	C.
	α Coronæ Borealis	56,0	11,2	26,1	41,1	56,8	11,8	15.28.26,9		15.27.41,41	G.
	(m) Mars 1 L.	28,7	42,7	57,2	11,5	26,4	40,6	20.19.55,0		20.19.11,73	C.
	β Aquarii	18,0	31,5	45,0	58,4	12,1	25,7	21.23.39,2		21.22.58,56	C.
	α Aquarii	44,1	57,5	11,0	24,2	38,0	51,2	21.58. 4,7		21.57.24,39	C.
	α Pegasi	56,4	10,3	24,2	38,0	52,0	5,9	22.57.19,7		22.56.38,07	C.
	(n) ☽ 1 L.	29,2	43,2	57,1	11,0	25,4	39,2	0.53.53,2		0.53.11,18	C.
	(o) Polaris	38.20,8	46.47,2	55.23,0	......	......	20.43,8	1.29.17,6	+1.42,15	1. 3.48,63	G.
	(o) η Piscium	......	......	33,7	47,7	1,8	15,5	1.23.29,3	−13,91	1.22.47,69	C.
Nov. 6	α Arietis	19,1	33,6	48,0	2,6	17,6	32,0	1.58.46,7		1.58. 2,80	C.
	(p) θ¹ Arietis	23,3	37,7	52,0	6,3	21,1	35,2	2. 9.49,5		2. 9. 6,44	C.
	☽ 1 L.	34,7	49,3	3,7	18,1	32,9	47,2	2.30. 1,7		2.29.18,23	C.
Nov. 7	β Aquarii	17,8	31,3	44,7	58,1	12,0	25,3	21.23.39,0		21.22.58,32	G.

ILLUMINATED END OF AXIS WEST. Order of Wires for Stars above the Pole, *GFEDCBA*.
From Nov. 3 .... EAST. .... *ABCDEFG*.

(a) Hurried. (b) Very faint: a star of magnitude 8,9. (c) The small star was seen. (d) One shutter, which would not open, was in the way. Thermometer, 46°. (e) Unsteady. (f) Hurried at first. (g) The wind was very loud all this evening. (h) Seconds of some wires doubtful, the clock being scarcely heard. (i) The counting being found 1ˢ in advance, all the wires except the first have been diminished 1ˢ. (k) Cloudy. (l) Misty. (m) Cloudy. Seconds of wire I. were not taken from the clock. (n) Hazy. (o) Very cloudy. (p) Faint from mist: very doubtful observation.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
+ 0,62	− 1,36	+ 6,15	8,13	31,63	23,50	0,01	23,53	17. 7. 31,67	− 2,18	α Herculis.
			58,25	21,76	23,51		23,54	0. 0. 21,79	− 4,71	α Andromedæ.
			0,66					0. 9. 24,20	− 4,60	38 Piscium. *nf.*
			25,70					0. 38. 49,24	− 4,73	⁎ N.P.D. 78°.20′.
			3,40					0. 43. 26,94	− 4,75	Piazzi O. 208.
			36,77					0. 48. 0,31	− 4,77	B.A.C. 258.
			55,68					1. 5. 19,22	− 4,99	φ Piscium.
			28,12					1. 11. 51,66	− 4,68	42 Ceti.
			1,75	25,37	23,62			1. 58. 25,29	− 5,15	α Arietis.
			5,83					2. 9. 29,37	− 5,08	θ¹ Arietis.
			46,00	9,51	23,51			2. 54. 9,54	− 4,76	α Ceti.
	− 0,28	+ 7,15	44,21	5,88	21,67	− 0,20	23,18	1. 4. 7,28	− 65,59	Polaris SP.
			} 23,20					14. 4. 46,26		⊙'s center.
			8,90	31,96	23,06					Arcturus.
			27,60	50,41	22,81	− 0,21	22,95	16. 19. 50,41	− 2,92	Antares.
			57,19					18. 55. 19,97	− 3,55	o Sagittarii.
			20,56					19. 13. 43,34		☽ 1 L.
			24,33					19. 31. 47,11	− 3,59	e¹ Sagittarii.
			45,21					19. 43. 7,99	− 3,72	57 Sagittarii.
			16,50	39,23	22,73			19. 47. 39,28	− 3,14	β Aquilæ.
			34,11					19. 58. 56,88		Mars 1 L.
			1,19	24,04	22,85			20. 9. 23,96	− 3,69	α² Capricorni.
			56,31					21. 2. 19,08	− 3,89	⁎N.P.D. 100°.50′.
			58,63	21,36	22,73			21. 23. 21,39	− 3,91	β Aquarii.
			43,71	5,69	21,99		22,74	1. 4. 6,44	− 65,40	Polaris.
− 0,89	+ 2,01	+ 3,84	} 40,08			0,03	22,40	14. 32. 2,50		⊙'s center.
			9,14	31,50	22,36			17. 7. 31,56	− 2,05	α Herculis.
			47,99	10,43	22,44			19. 43. 10,41	− 2,99	α Aquilæ.
			16,68	39,14	22,46			19. 47. 39,10	− 3,05	β Aquilæ.
			1,50	23,95	22,45			20. 9. 23,93	− 3,60	α² Capricorni.
			15,30					20. 16. 37,73		Mars 1 L.
			38,34	0,83	22,49			22. 57. 0,77	− 4,14	α Pegasi.
			34,58					23. 31. 57,01	− 4,36	ι Piscium.
			57,13					23. 51. 19,56	− 4,45	ω Piscium.
			59,29	21,69	22,40		22,43	0. 0. 21,72	− 4,64	α Andromedæ.
			23,37					0. 7. 45,80		☽ 1 L.
			45,11	4,06	18,95	0,03	22,44	1. 4. 7,57	− 63,77	Polaris SP.
			9,54	32,02	22,48			14. 8. 32,00	− 1,83	Arcturus.
			} 36,91					14. 35. 59,37		⊙'s center.
			41,60	4,01	22,41			15. 28. 4,06	− 1,47	α Coronæ Borealis.
			11,98					20. 19. 34,45		Mars 1 L.
			58,79	21,26	22,47			21. 23. 21,26	− 3,81	β Aquarii.
			24,62	47,05	22,43			21. 57. 47,09	− 3,91	α Aquarii.
			38,29	0,82	22,53			22. 57. 0,76	− 4,13	α Pegasi.
			11,40				22,47	0. 53. 33,87		☽ 1 L.
			44,98	3,95	18,97			1. 4. 7,45	− 63,66	Polaris.
			47,90					1. 23. 10,37	− 4,94	η Piscium.
	+ 1,91		3,00	25,48	22,48	0,10	22,47			α Arietis.
			6,64					2. 9. 29,12	− 5,20	θ¹ Arietis.
			18,43					2. 29. 40,91		☽ 1 L.
			58,55	21,22	22,67	− 0,15	22,80	21. 23. 21,22	− 3,77	β Aquarii.

Oct. 29. 22^h, the Transit was levelled.
Oct. 29. $22\frac{1}{2}^h$, the Transit was reversed, and the Error of Collimation determined.
Oct. 29. $23\frac{1}{4}^h$, and Nov. 8. 3^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Nov. 7	α Aquarii.........	43,8	57,1	10,4	24,0	37,8	51,0	21 . 58 . 4,5		21 . 57 . 24,09	G.
	α Pegasi.........	56,1	10,1	24,0	37,9	52,0	5,8	22 . 57 . 19,7		22 . 56 . 37,95	G.
	Polaris..........	38.19,6	46.49,0	......	3.41,8	12.19,2	20.40,2	1 . 29 . 11,0	− 1 . 25,02	1 . 3 . 45,11	G.
	α Arietis.........	19,0	33,4	48,0	2,7	17,3	31,9	1 . 58 . 46,3		1 . 58 . 2,65	G.
	(a) ε Arietis.........	14,4	28,3	43,0	57,6	12,2	26,4	2 . 50 . 40,7		2 . 49 . 57,52	C.
	δ Arietis.........	39,6	53,9	8,1	22,2	36,7	50,8	3 . 3 . 5,1		3 . 2 . 22,34	C.
	☽ 2 L.............	48,7	3,4	18,1	33,0	48,0	2,4	3 . 23 . 17,2		3 . 22 . 32,97	C.
	η Tauri.........	8,5	23,2	37,7	52,6	7,4	21,8	3 . 38 . 36,6		3 . 37 . 52,54	C.
	A¹ Tauri.........	24,6	39,0	53,5	7,9	22,7	37,0	3 . 55 . 51,5		3 . 55 . 8,03	C.
	Aldebaran........	55,5	9,6	23,5	37,6	51,8	5,6	4 . 27 . 19,6		4 . 26 . 37,60	C.
Nov. 8	Mars 1 L..........	13,5	27,7	42,0	56,6	11,0	25,6	20 . 31 . 39,8		20 . 30 . 56,60	C.
	α Aquarii.........	43,8	57,1	10,7	24,1	37,8	51,1	21 . 58 . 4,5		21 . 57 . 24,16	G.
	α Pegasi.........	56,4	10,2	24,0	38,0	52,1	5,9	22 . 57 . 19,8		22 . 56 . 38,06	G.
	α Andromedæ.....	13,2	28,6	43,8	59,0	14,6	29,4	0 . 0 . 44,9		23 . 59 . 59,07	G.
	α Arietis.........	19,0	33,7	48,1	2,7	17,5	32,0	1 . 58 . 46,4		1 . 58 . 2,77	G.
	α Ceti............	6,4	19,9	33,3	46,9	0,7	14,0	2 . 54 . 27,5		2 . 53 . 46,96	G.
	η Tauri...........	8,7	23,3	37,9	52,4	7,8	22,0	3 . 38 . 36,9		3 . 37 . 52,71	G.
	A¹ Tauri.........	24,9	39,3	53,8	8,2	23,0	37,1	3 . 55 . 51,6		3 . 55 . 8,27	G.
	☽ 2 L.............	51,0	5,9	20,8	35,7	51,0	5,6	4 . 16 . 20,4		4 . 15 . 35,77	G.
	Aldebaran........	55,8	9,8	23,8	37,9	52,0	5,9	4 . 27 . 19,9		4 . 26 . 37,87	G.
	τ Tauri...........	49,0	3,7	18,0	32,8	47,4	1,9	4 . 33 . 16,5		4 . 32 . 32,75	G.
	ε Bootis..........	1,7	16,8	32,0	47,0	2,7	17,3	14 . 38 . 32,9		14 . 37 . 47,20	G.
Nov. 9	(b) ☉ 1 L............	43,3	57,7	12,0	25,9	40,0	54,0	14 . 55 . 8,3		14 . 54 . 25,89	G.
	(b) ☉ 2 L............	59,1	13,3	27,2	41,6	55,9	9,7	14 . 57 . 23,9		14 . 56 . 41,52	G.
	α Coronæ Borealis.	56,3	11,5	26,5	41,7	57,0	12,0	15 . 28 . 27,1		15 . 27 . 41,73	G.
	Mars 1 L.........	9,9	24,3	38,7	53,0	7,8	......	20 . 34	+ 14,41	20 . 33 . 53,15	G.
	(c) β Aquarii.........	18,2	31,8	45,4	58,8	12,7	26,0	21 . 23 . 39,4		21 . 22 . 58,90	G.
Nov. 10	Arcturus.........	27,6	41,9	56,1	10,4	25,0	39,0	14 . 8 . 53,3		14 . 8 . 10,47	G.
Nov. 11	(c) ☉ 1 L............	48,7	2,7	16,4	31,0	45,1	59,2	15 . 3 . 13,5		15 . 2 . 30,94	G.
	(c) ☉ 2 L............	4,5	18,6	32,8	46,9	1,1	15,2	15 . 5 . 29,6		15 . 4 . 46,96	G.
	Mars 1 L.........	2,1	16,4	30,9	45,2	59,9	......	20 . 37	+ 14,38	20 . 37 . 45,28	G.
	β Aquarii.........	19,2	32,6	46,0	59,6	13,2	26,5	21 . 23 . 40,1		21 . 22 . 59,60	G.
	α Aquarii.........	45,0	58,5	12,0	25,4	39,0	52,2	21 . 58 . 6,0		21 . 57 . 25,44	G.
	α Andromedæ.....	14,3	29,9	45,0	0,1	15,8	30,9	0 . 0 . 46,2		0 . 0 . 0,31	G.
	(c) B.A.C. 258........	57,1	11,1	24,9	38,8	52,8	6,5	0 . 48 . 20,1		0 . 47 . 38,76	G.
	101 Piscium......	24,9	39,1	53,0	6,7	20,7	34,6	1 . 27 . 48,4		1 . 27 . 6,77	G.
	103 Piscium......	49,9	4,1	17,8	31,9	46,0	59,9	1 . 31 . 13,6		1 . 30 . 31,88	G.
	4 Arietis.........	42,3	56,1	10,2	24,1	38,4	52,4	1 . 40 . 6,4		1 . 39 . 24,27	G.
	γ Arietis. s........	56,8	11,0	25,0	39,1	53,7	7,9	1 . 45 . 22,0		1 . 44 . 39,36	G.
	ι Arietis..........	48,7	2,5	16,5	30,8	45,0	59,0	1 . 49 . 13,1		1 . 48 . 30,80	G.
	α Piscium. sf......	58,8	12,3	25,7	39,1	52,8	6,0	1 . 54 . 19,7		1 . 53 . 39,20	G.
	α Arietis.........	20,4	35,0	49,4	4,0	18,9	33,2	1 . 58 . 48,0		1 . 58 . 4,13	G.
	Aldebaran........	57,0	11,1	25,0	39,0	53,3	7,0	4 . 27 . 21,1		4 . 26 . 39,08	G.
Nov. 13	(d) ☉ 1 L............	56,8	11,4	25,3	39,5	53,8	7,8	15 . 11 . 22,0		15 . 10 . 39,52	C.
	(d) ☉ 2 L............	11,3	27,8	41,7	56,2	10,5	24,5	15 . 13 . 38,7		15 . 12 . 55,82	C.
Nov. 15	Regulus..........	2,6	16,2	30,0	43,9	58,0	11,5	10 . 0 . 25,2		9 . 59 . 43,91	G.
	☽ 2 L.............	15,8	29,5	43,4	57,1	11,3	25,0	10 . 33 . 38,7		10 . 32 . 57,26	G.
	d Leonis.........	29,8	43,2	56,7	10,2	24,0	37,2	10 . 52 . 50,9		10 . 52 . 10,28	G.
	φ Leonis.........	43,5	57,0	10,4	23,9	37,7	50,8	11 . 9 . 4,4		11 . 8 . 23,96	G.
	β Leonis.........	3,9	17,8	31,9	45,7	0,0	13,8	11 . 41 . 27,7		11 . 40 . 45,83	G.
	(c) Polaris SP........	......	......	55. 4,8	3.43,0	12.10,8	......	13.........	+ 0,22	13 . 3 . 39,74	G.
Nov. 16	☉ 1 L............	15,9	30,2	44,3	58,7	13,1	27,4	15 . 23 . 41,5		15 . 22 . 58,73	C.
	☉ 2 L............	33,0	47,3	1,2	15,8	30,2	44,3	15 . 25 . 58,6		15 . 25 . 15,77	C.
	α² Capricorni.....	22,4	36,2	50,0	3,7	17,8	31,4	20 . 9 . 45,2		20 . 9 . 3,81	C.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(*a*) Not good: the eye-glass was not adjusted to my sight.
(*b*) The first Limb unsatisfactory, on account of a great quantity of stray light. Thermometer at 38°.
(*c*) Cloudy.
(*d*) Hurried and confused at 1 L. the eye-glass being out of focus. Before taking 2 L. the eye-glass was rectified.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,89	+ 1,91	+ 3,84	24,32	47,01	22,69	− 0,15	22,80	21 . 57 . 46,98	− 3,87	α Aquarii.
			38,15	0,79	22,64			22 . 57 . 0,81	− 4,10	α Pegasi.
			41,26	3,38	22,12		22,65	1 . 4 . 3,90	− 63,09	Polaris.
			2,85	25,49	22,64			1 . 58 . 25,49	− 5,27	α Arietis.
			57,72					2 . 50 . 20,35	− 5,38	ε Arietis.
			22,54					3 . 2 . 45,17	− 5,35	δ Arietis.
			33,17					3 . 22 . 55,80		☽ 2 L.
			52,73					3 . 38 . 15,36	− 5,56	η Tauri.
			8,23					3 . 55 . 30,86	− 5,49	A¹ Tauri.
			37,81	0,41	22,60			4 . 27 . 0,43	− 5,29	Aldebaran.
			56,84			− 0,30	22,80	20 . 31 . 19,38		Mars 1 L.
			24,39	47,00	22,61			21 . 57 . 46,92	− 3,86	α Aquarii.
			38,27	0,78	22,51			22 . 57 . 0,78	− 4,09	α Pegasi.
			59,25	21,65	22,40		22,50	0 . 0 . 21,75	− 4,60	α Andromedæ.
			2,97	25,49	22,52			1 . 58 . 25,45	− 5,27	α Arietis.
			47,17	9,72	22,55			2 . 54 . 9,63	− 4,97	α Ceti.
			52,90					3 . 38 . 15,35	− 5,57	η Tauri.
			8,47					3 . 55 . 30,92	− 5,51	A¹ Tauri.
			35,97					4 . 15 . 58,42		☽ 2 L.
			38,08	0,43	22,35			4 . 27 . 0,53	− 5,31	Aldebaran.
			32,95					4 . 32 . 55,39	− 5,54	τ Tauri.
			47,38	9,44	22,06	− 0,45	22,40	14 . 38 . 9,51	− 1,60	ε Bootis.
			33,95					14 . 55 . 56,07		⊙'s center.
			41,91	4,02	22,11			15 . 28 . 4,02	− 1,48	α Coronæ Borealis.
			53,39					20 . 34 . 15,40		Mars 1 L.
			59,13	21,19	22,06			21 . 23 . 21,13	− 3,74	β Aquarii.
		+ 4,09	10,68	32,10	21,42	− 0,38	21,60	14 . 8 . 32,06	− 1,91	Arcturus.
			39,21					15 . 4 . 0,57		⊙'s center.
			45,54					20 . 38 . 6,81		Mars 1 L.
			59,85	21,16	21,31			21 . 23 . 21,11	− 3,71	β Aquarii.
			25,68	46,95	21,27			21 . 57 . 46,93	− 3,81	α Aquarii.
			0,50	21,62	21,12		21,22	0 . 0 . 21,72	− 4,57	α Andromedæ.
			38,98					0 . 48 . 0,19	− 4,74	B.A.C. 258.
			6,99					1 . 27 . 28,19	− 4,94	101 Piscium.
			32,10					1 . 30 . 53,30	− 5,00	103 Piscium.
			24,49					1 . 39 . 45,68	− 5,04	4 Arietis.
			39,57					1 . 45 . 0,76	− 5,11	γ Arietis. *s.*
			31,02					1 . 48 . 52,21	− 5,10	ι Arietis.
			39,43					1 . 54 . 0,62	− 4,85	α Piscium. *sf.*
			4,34	25,50	21,16			1 . 58 . 25,53	− 5,28	α Arietis.
			39,30	0,48	21,18			4 . 27 . 0,45	− 5,36	Aldebaran.
			47,93					15 . 12 . 8,66		⊙'s center.
	+ 2,42		44,16	4,07	19,91	− 0,21	19,94	10 . 0 . 4,01	− 3,73	Regulus
			57,52					10 . 33 . 17,37		☽ 2 L.
			10,53					10 . 52 . 30,37	− 3,28	*d* Leonis.
			24,21					11 . 8 . 44,05	− 3,15	φ Leonis.
			46,08	5,89	19,81			11 . 41 . 5,92	− 2,98	β Leonis.
			43,56	0,55	16,99			1 . 4 . 3,39	− 60,26	Polaris SP.
			7,52					15 . 24 . 27,33		⊙'s center.
			4,07	23,77	19,70			20 . 9 . 23,83	− 3,42	α² Capricorni.

Nov. 21. 2^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Nov. 16	Mars 1 L.	39,5	53,7	7,8	22,2	36,6	50,8	20 . 55 . 5,0		20 . 54 . 22,23	C.
	⁎ N.P.D. 100°. 50′.	17,4	31,2	45,0	58,6	12,5	26,1	21 . 2 . 40,0		21 . 1 . 58,69	C.
	β Aquarii	20,3	34,0	47,4	1,0	14,8	28,0	21 . 23 . 41,7		21 . 23 . 1,03	G.
	α Aquarii	46,4	0,0	13,4	26,8	40,4	53,9	21 . 58 . 7,2		21 . 57 . 26,87	G.
	α Pegasi	59,1	12,9	26,8	40,7	54,8	8,4	22 . 57 . 22,3		22 . 56 . 40,71	G.
	Polaris............	38.17,8	46.47,2	55.15,0	3.42,8	12.20,4	......	1 . 29 . 15,0	+ 2 . 49,38	1 . 3 . 45,75	G.
	(a) ☽ 2 L.	55,0	8,8	22,4	36,3	50,3	4,2	11 . 27 . 18,0		11 . 26 . 36,43	C.
	β Leonis..........	......	......	32,0	45,9	0,1	14,0	11 . 41 . 28,0	− 13,98	11 . 40 . 46,02	C.
	Polaris SP.	......	......	55. 3,2	3.41,0	12. 8,8	20.36,2	13 . 29 . 5,0	− 8 . 29,08	13 . 3 . 37,76	G.
Nov. 17	ε Bootis...........	4,3	19,3	34,6	49,8	5,2	20,2	14 . 38 . 35,5		14 . 37 . 49,85	C.
Nov. 18	⊙ 1 L.	32,7	46,8	1,0	15,5	30,0	44,2	15 . 31 . 58,5		15 . 31 . 15,53	C.
	(b) ⊙ 2 L.	50,3	4,6	18,9	33,2	47,7	2,0	15 . 34 . 15,9		15 . 33 . 33,23	C.
	(c) α Serpentis	34,3	47,7	1,0	14,8	28,6	42,0	15 . 36 . 55,7		15 . 36 . 14,87	C.
	Mars 1 L.	28,3	42,7	56,8	11,2	25,7	39,8	21 . 0 . 53,9		21 . 0 . 11,20	C.
	β Aquarii.	20,6	34,1	47,6	1,2	15,0	28,3	21 . 23 . 42,0		21 . 23 . 1,25	C.
	α Pegasi	59,2	13,0	26,8	40,9	54,9	8,7	22 . 57 . 22,6		22 . 56 . 40,87	C.
	(d) Σ 1.	40,3	57,1	14,0	30,6	47,7	4,1	0 . 1 . 20,8		0 . 0 . 30,65	C.
	(e) Σ 25.	39,2	53,0	7,1	21,0	35,2	49,1	0 . 11 . 2,9		0 . 10 . 21,07	C.
	(f) ⁎ N.P.D. 78°. 20′.	48,2	2,1	15,4	29,3	43,2	56,8	0 . 39 . 10,5		0 . 38 . 29,36	C.
	(f) Piazzi O. 208.....	26,0	39,4	53,3	7,0	21,1	34,7	0 . 43 . 48,2		0 . 43 . 7,10	C.
	B.A.C. 258.	59,1	12,7	26,5	40,4	54,3	8,1	0 . 48 . 22,0		0 . 47 . 40,44	C.
	μ Cassiopeiæ	30,1	53,0	15,8	38,7	2,2	24,9	0 . 58 . 48,0		0 . 57 . 38,96	C.
	(d) φ Piscium	15,3	30,1	44,8	59,6	14,4	29,1	1 . 5 . 43,7		1 . 4 . 59,58	C.
	(d) 42 Ceti	51,4	5,0	18,3	31,8	45,2	58,6	1 . 12 . 12,2		1 . 11 . 31,78	C.
	103 Piscium......	51,4	5,6	19,2	33,5	47,7	1,6	1 . 31 . 15,5		1 . 30 . 33,50	C.
	(g) 4 Arietis.........	43,9	57,8	11,7	26,0	40,2	53,9	1 . 40 . 8,0		1 . 39 . 25,93	C.
	(h) γ Arietis. *np*......	58,6	12,7	26,8	41,0	55,2	......	1 . 44	+ 14,20	1 . 44 . 41,06	C.
	(i) α Arietis..........	22,0	......	51,3	5,7	20,6	35,1	1 . 58	+ 2,92	1 . 58 . 5,86	C.
Nov. 20	(i) ⊙ 1 L.	52,8	7,1	21,3	35,8	50,3	4,7	15 . 40 . 18,9		15 . 39 . 35,84	G.
	(i) ⊙ 2 L.	11,0	25,2	39,6	53,9	8,5	22,7	15 . 42 . 37,0		15 . 41 . 53,98	G.
	α Herculis........	30,3	44,2	58,0	12,0	26,1	39,9	17 . 7 . 53,8		17 . 7 . 12,04	G.
	α Ophiuchi	40,3	54,1	7,7	21,5	35,6	49,2	17 . 28 . 3,0		17 . 27 . 21,63	G.
	α Aquilæ	9,9	23,5	37,1	50,5	4,5	18,0	19 . 43 . 31,5		19 . 42 . 50,71	G.
	β Aquilæ.........	39,0	52,6	5,9	19,5	33,1	46,5	19 . 48 . 0,1		19 . 47 . 19,53	G.
	⁎ N.P.D. 100°. 50′.	18,0	31,8	45,3	59,1	13,1	26,7	21 . 2 . 40,1		21 . 1 . 59,16	G.
	Mars 1 L.	16,7	30,9	45,0	59,2	13,7	27,7	21 . 6 . 42,0		21 . 5 . 59,32	G.
	β Aquarii	21,0	34,5	48,0	1,6	15,3	28,7	21 . 23 . 42,2		21 . 23 . 1,61	G.
	Σ 1. *sf*.	40,9	57,5	14,1	30,9	48,0	4,4	0 . 1 . 21,1		0 . 0 . 30,98	G.
	38 Piscium	23,8	37,2	50,9	4,5	18,2	31,7	0 . 9 . 45,2		0 . 9 . 4,50	G.
	58 Piscium	54,4	8,3	21,8	35,4	49,5	3,0	0 . 39 . 16,9		0 . 38 . 35,61	G.
	(k) Σ 63.	4,9	18,4	32,2	45,7	59,9	13,4	0 . 42 . 27,1		0 . 41 . 45,94	G.
	B.A.C. 258.	59,1	13,0	26,7	40,6	54,8	8,3	0 . 48 . 22,1		0 . 47 . 40,65	G.
Nov. 23	(l) ⊙ 1 L.	28,0	42,5	56,9	11,1	25,8	40,1	15 . 52 . 54,6		15 . 52 . 11,28	G.
	(l) ⊙ 2 L.	46,4	1,1	15,6	30,0	44,6	58,8	15 . 55 . 13,1		15 . 54 . 29,94	G.
	η Piscium	8,6	22,5	36,2	50,2	4,5	18,1	1 . 23 . 32,0		1 . 22 . 50,30	G.
	101 Piscium.......	26,4	40,2	54,0	8,0	22,0	35,8	1 . 27 . 49,5		1 . 27 . 7,99	G.
	105 Piscium......	16,1	30,1	44,0	57,9	12,1	26,0	1 . 31 . 39,9		1 . 30 . 58,02	G.
	4 Arietis	43,5	57,5	11,4	25,3	39,7	53,4	1 . 40 . 7,5		1 . 39 . 25,47	G.
	γ Arietis. *np*......	57,9	12,1	26,3	40,6	55,0	9,0	1 . 45 . 23,1		1 . 44 . 40,57	G.
	ι Arietis	49,7	3,9	18,0	32,0	46,2	0,2	1 . 49 . 14,2		1 . 48 . 32,03	G.
	(m) Σ 194.............	......	......	0,9	15,8	30,8	45,1	1 . 51 . 0,0	− 14,75	1 . 50 . 15,77	G.
	α Piscium. *sf*.	59,9	13,6	27,0	40,4	54,0	7,3	1 . 54 . 20,9		1 . 53 . 40,44	G.
	α Arietis..........	21,7	36,1	50,9	5,4	20,1	34,5	1 . 58 . 49,1		1 . 58 . 5,40	G.
	θ^1 Arietis..........	26,7	40,9	55,1	9,3	23,7	38,0	2 . 9 . 52,1		2 . 9 . 9,40	G.
	Σ 274. *nf*.	30,4	44,0	57,3	10,8	24,5	37,8	2 . 23 . 51,2		2 . 23 . 10,85	G.
	μ Arietis	34,0	48,2	2,4	16,8	31,2	45,2	2 . 33 . 59,5		2 . 33 . 16,76	G.
	α Ceti	9,0	22,5	36,0	49,4	3,1	16,4	2 . 54 . 30,0		2 . 53 . 49,49	G.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG.*

(*a*) Very cloudy. All guess except Wires VI. and VII. (*b*) The last wire hurried. (*c*) The Sun was shining inconveniently in my face. (*d*) Observed as single. (*e*) Wire VII. doubtful. The stars very close: observed as single. (*f*) Hurried. To gain time the seconds of Wire I. were not taken from the clock. Piazzi O. 208 was judged to be of magnitude 7,8. (*g*) Not satifactory. (*h*) The *np* is rather the smaller star. (*i*) Cloudy. (*k*) Not seen double: no star near this. (*l*) Just bright enough to see through the dark glass: rain falling. (*m*) Observed as single.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
– 0,89	+ 2,42	+ 4,09	22,50			– 0,21	19,94	20 . 54 . 42,26		Mars 1 L.
			58,96					21 . 2 . 18,72	– 3,62	✱ N.P.D. 100°. 50′.
			1,29	21,09	19,80			21 . 23 . 21,04	– 3,64	β Aquarii.
			27,13	46,88	19,75			21 . 57 . 46,88	– 3,74	α Aquarii.
			40,96	0,68	19,72			22 . 57 . 0,70	– 3,99	α Pegasi.
			42,56	0,32	17,76		19,73	1 . 4 . 2,28	– 60,03	Polaris.
			36,68			– 0,15	19,71	11 . 26 . 56,32		☽ 2 L.
			46,27	5,91	19,64					β Leonis.
			41,58	0,10	18,52			1 . 4 . 1,21	– 59,81	Polaris SP.
			50,08	9,53	19,45	– 0,13	19,60	14 . 38 . 9,60	– 1,69	ε Bootis.
			} 24,65					15 . 32 . 44,17		⊙'s center.
			15,12	34,61	19,49			15 . 36 . 34,64	– 2,20	α Serpentis.
			11,47					21 . 0 . 30,96		Mars 1 L.
			1,51	21,07	19,56			21 . 23 . 20,99	– 3,62	β Aquarii.
			41,12	0,66	19,54			22 . 57 . 0,60	– 3,97	α Pegasi.
			30,87				19,47	0 . 0 . 50,34	– 4,60	Σ 1.
			21,31					0 . 10 . 40,78	– 4,49	Σ 25.
			29,61					0 . 38 . 49,08	– 4,65	✱ N.P.D. 78°. 20′.
			7,35					0 . 43 . 26,82	– 4,68	Piazzi O. 208.
			40,69					0 . 48 . 0,16	– 4,72	B.A.C. 258.
			39,13					0 . 57 . 58,59	– 5,96	μ Cassiopeiæ.
			59,82					1 . 5 . 19,28	– 4,98	φ Piscium.
			32,04					1 . 11 . 51,50	– 4,67	42 Ceti.
			33,75					1 . 30 . 53,21	– 4,99	103 Piscium.
			26,18					1 . 39 . 45,64	– 5,05	4 Arietis.
			41,30					1 . 45 . 0,76	– 5,12	γ Arietis. *np.*
			6,10	25,52	19,42			1 . 58 . 25,56	– 5,30	α Arietis.
			} 45,18			– 0,15	19,31	15 . 41 . 4,39		⊙'s center.
			12,28	31,43	19,15			17 . 7 . 31,48	– 1,98	α Herculis.
			21,88	41,10	19,22			17 . 27 . 41,08	– 2,08	α Ophiuchi.
			50,96	10,21	19,25			19 . 43 . 10,15	– 2,77	α Aquilæ.
			19,78	38,92	19,14			19 . 47 . 38,97	– 2,83	β Aquilæ.
			59,43					21 . 2 . 18,61	– 3,57	✱ N.P.D. 100°. 50′.
			59,59					21 . 6 . 18,77		Mars 1 L.
			1,87	21,04	19,17			21 . 23 . 21,05	– 3,59	β Aquarii.
			31,20				19,16	0 . 0 . 50,36	– 4,58	Σ 1. *sf.*
			4,75					0 . 9 . 23,91	– 4,43	38 Piscium.
			35,85					0 . 38 . 55,01	– 4,61	58 Piscium.
			46,18					0 . 42 . 5,34	– 4,65	Σ 63.
			40,90					0 . 48 . 0,06	– 4,70	B.A.C. 258.
		+ 2,89	} 20,80			+ 0,14	19,91	15 . 53 . 40,80		⊙'s center.
			50,49				20,05	1 . 23 . 10,55	– 4,91	η Piscium.
			8,18					1 . 27 . 28,24	– 4,93	101 Piscium.
			58,22					1 . 31 . 18,28	– 4,97	105 Piscium.
			25,67					1 . 39 . 45,73	– 5,04	4 Arietis.
			40,76					1 . 45 . 0,82	– 5,11	γ Arietis. *np.*
			32,23					1 . 48 . 52,29	– 5,10	ι Arietis.
			15,97					1 . 50 . 36,03	– 5,28	Σ 194.
			40,63					1 . 54 . 0,69	– 4,85	α Piscium. *sf.*
			5,59	25,51	19,92			1 . 58 . 25,65	– 5,29	α Arietis.
			9,59					2 . 9 . 29,65	– 5,26	θ¹ Arietis.
			11,04					2 . 23 . 31,10	– 4,92	Σ 274. *nf.*
			16,95					2 . 33 . 37,01	– 5,38	μ Arietis.
			49,68	9,80	20,12			2 . 54 . 9,75	– 5,05	α Ceti.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Nov. 23	Σ 559. *sf.*	31,2	45,2	59,2	13,4	28,0	41,6	4.24.56,0		4.24.13,51	G.
	Aldebaran	58,4	12,3	26,2	40,1	54,6	8,6	4.27.22,3		4.26.40,35	G.
	Rigel	3,4	17,0	30,6	44,1	58,0	11,4	5. 7.25,0		5. 6.44,21	G.
Nov. 24	α Andromedæ	......	......	45,9	1,0	16,5	31,7	0. 0.46,9	− 15,27	0. 0. 1,13	G.
	34 Piscium	......	......	......	42,1	56,1	9,7	0. 2.23,4	− 20,54	0. 1.42,29	G.
	(*a*) Σ 24	21,6	36,4	51,1	6,1	21,1	36,0	0.10.50,9		0.10. 6,17	G.
Nov. 26	(*b*) Polaris SP	......	......	......	3.38,8	12. 8,0	20.33,4	13..........	− 8.30,50	13. 3.36,23	G.
	Arcturus	28,7	43,0	57,1	11,5	26,0	40,1	14. 8.54,7		14. 8.11,58	G.
	ε Bootis	3,3	18,5	33,7	48,8	4,3	19,2	14.38.34,7		14.37.48,93	G.
	(*c*) α Coronæ Borealis	58,0	13,3	28,3	43,4	59,0	13,8	15.28.28,9		15.27.43,53	C.
Nov. 27	(*d*) ☉ 1 L.	25,8	40,5	......	9,0	......	38,3	16. 9.52,7	+ 0,02	16. 9. 9,28	C.
	(*d*) ☉ 2 L.	45,3	0,0	14,3	28,7	43,7	57,9	16.12.12,3		16.11.28,89	C.
	ν Aquarii	3,6	17,4	31,1	45,0	58,8	12,4	21. 1.26,1		21. 0.44,91	C.
	(*e*) β Aquarii	19,6	33,0	46,4	......	......	......	21.22....	+ 27,11	21.23. 0,11	C.
	(*e*) ☽ 1 L.	48,7	2,7	16,6	30,6	......	58,7	21.32.12,6	+ 2,36	21.31.30,68	C.
	α Pegasi	58,0	11,9	25,7	39,5	53,8	7,4	22.57.21,2		22.56.39,65	G.
	Polaris	38.10,2	46.38,8	55. 8,6	......	......	20.39,6	1..........	+ 8.30,33	1. 3.39,63	G.
	ε Bootis	3,2	18,2	33,4	48,7	4,1	19,0	14.38.34,4		14.37.48,72	G.
	α Coronæ Borealis	57,8	13,0	28,0	43,1	58,5	13,3	15.28.28,6		15.27.43,18	G.
Nov. 28	☉ 1 L.	42,0	56,8	11,1	25,6	40,2	54,6	16.14. 9,0		16.13.25,62	G.
	☉ 2 L.	1,9	16,4	30,9	45,2	0,0	14,3	16.16.28,8		16.15.45,36	G.
	(*f*) α Herculis	28,7	42,6	56,5	10,3	24,5	38,1	17. 7.52,0		17. 7.10,38	G.
	α Ophiuchi	38,4	52,5	6,1	19,9	34,0	47,6	17.28. 1,4		17.27.19,99	G.
	Mars 1 L.	17,1	31,3	45,4	59,5	13,6	27,8	21.29.41,8		21.28.59,50	G.
	(*e*) α Aquarii	45,1	58,7	12,1	25,5	39,1	52,4	21.58. 5,9		21.57.25,54	G.
	(*e*) θ Aquarii	34,4	48,0	1,6	......	29,1	42,4	22. 8.56,1	− 0,01	22. 8.15,26	G.
	☽ 1 L.	2,8	16,6	30,2	44,1	58,1	11,9	22.20.25,9		22.19.44,23	G.
	η Aquarii	19,5	32,9	46,2	59,8	13,3	26,7	22.27.40,1		22.26.59,79	G.
	Polaris SP	......	......	54.59,2	3.37,0	12. 4,2	20.32,2	13..........	− 4.14,43	13. 3.33,72	G.
	Arcturus	28,0	42,3	56,6	11,0	25,6	39,6	14. 8.54,0		14. 8.11,01	G.
	ε Bootis	......	......	33,1	48,3	3,8	18,8	14.38.34,0	− 15,23	14.37.48,37	G.
	α Coronæ Borealis	57,6	12,8	27,7	43,0	58,2	13,1	15.28.28,4		15.27.42,97	G.
	(*f*) α Serpentis	32,7	46,1	59,7	13,2	27,0	40,4	15.36.54,0		15.36.13,30	G.
Nov. 29	☉ 1 L.	59,0	13,7	28,0	42,5	57,2	11,6	16.18.26,1		16.17.42,58	G.
	☉ 2 L.	19,1	33,6	48,1	2,6	17,3	31,7	16.20.46,1		16.20. 2,64	G.
	β Aquilæ	36,8	50,2	3,8	17,2	31,1	44,5	19.47.58,0		19.47.17,37	G.
	β Aquarii	18,8	32,1	45,8	59,3	13,1	26,5	21.23.40,1		21.22.59,39	G.
	Mars 1 L.	8,6	22,4	36,6	50,7	4,9	18,8	21.32.32,8		21.31.50,68	G.
	ε Cephei	44,4	8,8	32,9	57,1	21,7	45,6	22.10. 9,8		22. 8.57,19	G.
	η Aquarii	19,0	32,5	46,0	59,5	13,1	26,4	22.27.40,0		22.26.59,50	G.
	x^2 Piscium	36,9	50,2	3,6	17,1	30,8	44,1	22.52.57,7		22.52.17,20	G.
	β Pegasi	7,1	22,3	37,4	52,5	8,0	22,9	22.56.38,0		22.55.52,60	G.
	☽ 1 L.	20,1	34,0	47,5	1,4	15,2	28,9	23. 6.42,7		23. 6. 1,40	G.
	κ^1 Piscium	55,2	8,8	22,1	35,7	49,4	2,7	23.19.16,0		23.18.35,70	G.
	ι Piscium	54,8	8,3	21,8	35,2	49,0	2,2	23.32.15,9		23.31.35,31	G.
	(*g*) α Andromedæ	14,2	29,5	44,6	0,0	15,4	30,6	0. 0.46,0		0. 0. 0,04	G.
	Σ 4. *p.*	......	......	......	......	44,1	57,4	0. 2.10,9	− 27,21	0. 1.30,26	G.
	Σ 24. *nf.*	20,2	35,4	50,1	5,0	20,1	35,1	0.10.49,6		0.10. 5,07	G.
	(*h*) Σ 63	2,7	16,3	30,0	43,8	57,8	11,3	0.42.25,0		0.41.43,84	G.
	B.A.C. 258	57,0	10,9	24,7	38,4	52,6	6,1	0.48.20,0		0.47.38,53	G.
	μ Cassiopeiæ	28,1	51,1	13,8	37,0	0,1	23,1	0.58.46,0		0.57.37,03	G.
	Polaris	......	46.40,2	55. 5,4	3.34,6	12.11,8	20.35,2	1.29. 5,0	− 4.14,89	1. 3.37,14	G.
	η Piscium	7,2	21,0	35,0	48,8	3,0	16,8	1.23.30,7		1.22.48,93	G.
	101 Piscium	25,0	39,0	52,9	6,5	20,8	34,4	1.27.48,2		1.27. 6,69	G.
	103 Piscium	49,7	3,7	17,7	31,7	45,9	59,7	1.31.13,6		1.30.31,71	G.
	4 Arietis	42,0	56,1	10,0	24,0	38,3	52,1	1.40. 6,0		1.39.24,07	G.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *GFEDCBA*.

(*a*) Faint from haze. (*b*) Very much clouded. (*c*) Cloudy, and wind loud. (*d*) The wind so loud, clock could scarcely be heard. Wire VII. of 2 L. was written down 13,3.

(*e*) Cloudy. (*f*) Faint. (*g*) Wire IV. was written down 59,0. (*h*) Not seen double.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,89	+ 2,42	+ 2,89	13,71			+ 0,14	20,05	4 . 24 . 33,79	− 5,61	Σ 559. *sf.*
			40,55	0,67	20,12			4 . 27 . 0,63	− 5,55	Aldebaran.
			44,40	4,52	20,12			5 . 7 . 4,48	− 4,80	Rigel.
			1,32	21,49	20,17	0,11	20,17			α Andromedæ.
			42,48					0 . 2 . 2,65	− 4,35	34 Piscium.
			6,36					0 . 10 . 26,53	− 4,51	Σ 24.
	+ 2,30		38,38	55,89	17,51	− 0,25	20,41	1 . 3 . 58,93	− 55,60	Polaris SP.
			11,77	32,36	20,59			14 . 8 . 32,33	− 2,17	Arcturus.
			49,11	9,67	20,56			14 . 38 . 9,67	− 1,83	ε Bootis.
			43,71	4,16	20,45			15 . 28 . 4,28	− 1,62	α Coronæ Borealis.
			19,28					16 . 10 . 39,86		⊙'s center.
			45,10					21 . 1 . 5,73	− 3,50	ν Aquarii.
			0,30	20,95	20,65			21 . 23 . 20,93	− 3,50	β Aquarii.
			30,87					21 . 31 . 51,50		☽ 1 L.
			39,83	0,55	20,72			22 . 57 . 0,48	− 3,86	α Pegasi.
			37,97	55,60	17,63		20,66	1 . 3 . 58,64	− 55,31	Polaris.
		+ 2,90	48,90	9,69	20,79	0,31	20,66	14 . 38 . 9,75	− 1,85	ε Bootis.
			43,36	4,17	20,81			15 . 28 . 4,22	− 1,63	α Coronæ Borealis.
			35,68					16 . 14 . 56,55		⊙'s center.
			10,57	31,44	20,87			17 . 7 . 31,45	− 1,99	α Herculis.
			20,18	41,09	20,91			17 . 27 . 41,07	− 2,07	α Ophiuchi.
			59,69					21 . 29 . 20,63		Mars 1 L.
			25,73	46,74	21,01			21 . 57 . 46,67	− 3,60	α Aquarii.
			15,45					22 . 8 . 36,40	− 3,75	θ Aquarii.
			44,42					22 . 20 . 5,37		☽ 1 L.
			59,98					22 . 27 . 20,93	− 3,76	η Aquarii.
			35,89	54,68	18,79	0,32	20,98	1 . 3 . 57,04	− 54,39	Polaris SP.
			11,20	32,40	21,20			14 . 8 . 32,37	− 2,21	Arcturus.
			48,55	9,71	21,16			14 . 38 . 9,73	− 1,87	ε Bootis.
			43,15	4,19	21,04			15 . 28 . 4,34	− 1,65	α Coronæ Borealis.
			13,49	34,73	21,24			15 . 36 . 34,68	− 2,32	α Serpentis.
			52,80					16 . 19 . 14,00		⊙'s center.
			17,56	38,84	21,28			19 . 47 . 38,80	− 2,75	β Aquilæ.
			59,58	20,93	21,35			21 . 23 . 20,84	− 3,48	β Aquarii.
			50,87					21 . 32 . 12,14		Mars 1 L.
			57,34					22 . 9 . 18,62	− 2,47	ε Cephei.
			59,69					22 . 27 . 20,97	− 3,74	η Aquarii.
			17,39					22 . 52 . 38,67	− 3,89	x^2 Piscium.
			52,78					22 . 56 . 14,07	− 3,72	β Pegasi.
			1,59					23 . 6 . 22,88		☽ 1 L.
			35,88					23 . 18 . 57,17	− 4,04	κ^1 Piscium.
			35,50					23 . 31 . 56,79	− 4,11	ι Piscium.
			0,22	21,44	21,22		21,30	0 . 0 . 21,52	− 4,39	α Andromedæ.
			30,45					0 . 1 . 51,75	− 4,30	Σ 4. *p.*
			5,25					0 . 10 . 26,55	− 4,46	Σ 24. *nf.*
			44,03					0 . 42 . 5,34	− 4,58	Σ 63.
			38,72					0 . 48 . 0,03	− 4,64	B.A.C. 258.
			37,18					0 . 57 . 58,49	− 5,81	μ Cassiopeiæ.
			35,46	54,38	18,90			1 . 3 . 56,77	− 54,09	Polaris.
			49,12					1 . 23 . 10,44	− 4,88	η Piscium.
			6,87					1 . 27 . 28,19	− 4,90	101 Piscium.
			31,90					1 . 30 . 53,22	− 4,96	103 Piscium.
			24,26					1 . 39 . 45,58	− 5,02	4 Arietis.

Nov. 28. 22^h, the Transit was levelled.

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Nov. 29	ι Arietis..........	48,3	2,4	16,5	30,6	44,9	58,8	1 . 49 . 12,9		1 . 48 . 30,62	G.
	(a) Σ 194..............	......	......	59,6	14,2	29,3	43,8	1 . 50 . 58,7	− 14,75	1 . 50 . 14,37	G.
	α Piscium. *sf.*.....	58,6	12,0	25,4	39,0	52,8	6,1	1 . 54 . 19,5		1 . 53 . 39,06	G.
	α Arietis.........	20,1	34,8	49,2	3,9	18,9	33,1	1 . 58 . 47,9		1 . 58 . 3,98	G.
	(b) Faye's Comet.....	34,2	47,8	1,7	15,4	......	......	5 . 21	+ 20,33	5 . 21 . 15,11	G.
Dec. 1	☽ 1 L.............	19,8	33,8	47,4	1,3	15,6	29,2	0 . 37 . 43,1		0 . 37 . 1,45	G.
	ε Piscium.........	50,0	3,8	17,1	30,7	44,5	57,9	0 . 55 . 11,5		0 . 54 . 30,78	G.
	η Piscium........	......	......	......	48,2	2,7	16,3	1 . 23 . 30,1	− 20,88	1 . 22 . 48,45	G.
	α Arietis.........	20,0	34,5	49,0	3,7	18,2	32,8	1 . 58 . 47,5		1 . 58 . 3,67	G.
	Arcturus.........	27,6	41,9	56,1	10,2	25,0	39,1	14 . 8 . 53,5		14 . 8 . 10,48	G.
	α Coronæ Borealis.	57,0	12,0	27,1	42,1	57,7	12,6	15 . 28 . 27,8		15 . 27 . 42,33	G.
Dec. 2	☉ 1 L............	53,7	8,4	22,8	37,4	52,2	6,7	16 . 31 . 21,1		16 . 30 . 37,47	C.
	☉ 2 L............	14,3	28,9	43,4	58,0	12,7	26,9	16 . 33 . 41,7		16 . 32 . 57,99	C.
	α Aquilæ.........	7,2	20,8	34,2	47,8	1,7	15,1	19 . 43 . 28,8		19 . 42 . 47,95	C.
	β Aquilæ.........	36,1	49,6	3,0	16,6	30,4	43,7	19 . 47 . 57,4		19 . 47 . 16,69	C.
Dec. 4	α Aquilæ.........	6,6	20,0	33,5	47,1	1,0	14,4	19 . 43 . 28,1		19 . 42 . 47,25	G.
	β Aquilæ.........	35,4	48,9	2,2	15,9	29,7	43,0	19 . 47 . 56,6		19 . 47 . 15,96	G.
	α^2 Capricorni.....	19,5	33,1	47,0	0,8	14,9	28,5	20 . 9 . 42,4		20 . 9 . 0,88	G.
Dec. 5	(c) α Ceti............	6,1	19,7	......	46,4	0,1	13,5	2 . 54	+ 5,39	2 . 53 . 46,75	G.
	(d) ☽ 1 L.............	12,3	27,6	42,2	57,2	12,4	27,1	3 . 55 . 41,9		3 . 54 . 57,25	G.
	υ^1 Tauri..........	54,2	8,9	23,4	38,0	52,8	7,1	4 . 17 . 21,7		4 . 16 . 38,02	G.
	Aldebaran........	55,6	9,4	23,3	37,4	51,8	5,5	4 . 27 . 19,7		4 . 26 . 37,53	G.
	τ Tauri...........	48,8	3,4	17,8	32,4	47,1	1,7	4 . 33 . 16,1		4 . 32 . 32,47	G.
	Rigel............	0,7	14,2	27,8	41,3	55,1	8,5	5 . 7 . 22,1		5 . 6 . 41,38	G.
	Arcturus.........	26,1	40,5	54,8	9,1	23,6	37,9	14 . 8 . 52,1		14 . 8 . 9,16	G.
	(e) α Coronæ Borealis.	55,6	10,8	25,6	......	......	......	15 . 28 . 26,2	+ 11,38	15 . 27 . 40,93	G.
Dec. 6	(f) ☉ 1 L............	15,0	29,8	44,1	58,6	13,5	28,1	16 . 48 . 42,8		16 . 47 . 58,85	G.
	(f) ☉ 2 L............	36,2	50,8	5,4	20,1	35,2	49,6	16 . 51 . 4,0		16 . 50 . 20,18	G.
	α Aquilæ.........	5,8	19,3	32,7	46,5	0,3	13,8	19 . 43 . 27,3		19 . 42 . 46,53	G.
	β Aquilæ.........	34,8	48,2	1,7	15,2	28,9	42,4	19 . 47 . 56,0		19 . 47 . 15,31	G.
	α^2 Capricorni.....	18,8	32,7	46,4	0,1	14,1	27,8	20 . 9 . 41,7		20 . 9 . 0,22	G.
	β Pegasi.........	5,0	20,1	35,1	50,3	5,8	20,8	22 . 56 . 35,9		22 . 55 . 50,43	G.
	58 Piscium.......	50,2	4,0	17,6	31,2	45,2	58,9	0 . 39 . 12,6		0 . 38 . 31,38	G.
	(g) Σ 63.............	0,7	14,1	28,0	41,6	55,4	9,0	0 . 42 . 22,9		0 . 41 . 41,67	G.
	μ Cassiopeiæ.....	25,9	48,8	11,5	34,5	58,1	20,8	0 . 58 . 43,8		0 . 57 . 34,77	G.
	42 Ceti...........	47,4	0,9	14,4	27,6	41,5	54,8	1 . 12 . 8,2		1 . 11 . 27,83	G.
	(h) ✱ N.P.D. 33°.37′.	30,1	54,8	19,2	43,2	7,8	32,5	1 . 23 . 57,0		1 . 22 . 43,51	G.
	ι Arietis..........	46,2	0,4	14,4	28,4	42,8	56,7	1 . 49 . 10,8		1 . 48 . 28,53	G.
	υ^1 Tauri..........	......	8,6	23,0	37,7	52,5	6,8	4 . 17 . 21,2	− 7,29	4 . 16 . 37,68	G.
	Aldebaran........	55,1	9,1	23,0	37,1	51,1	5,1	4 . 27 . 19,2		4 . 26 . 37,10	G.
	τ Tauri...........	48,5	3,0	17,4	32,0	46,9	1,1	4 . 33 . 15,9		4 . 32 . 32,11	G.
	(i) ☽ 1 L............	40,8	55,7	10,6	25,7	40,9	55,8	4 . 50 . 10,8		4 . 49 . 25,76	G.
	(i) ☽ 2 L............	55,9	11,0	25,9	40,9	56,0	10,9	4 . 52 . 25,9		4 . 51 . 40,93	G.
	(k) β Tauri...........	......	34,3	49,8	5,0	20,6	35,8	5 . 16 . 51,0	− 7,66	5 . 16 . 5,09	G.
Dec. 8	☉ 1 L............	59,0	13,7	28,1	42,8	57,7	12,1	16 . 57 . 26,8		16 . 56 . 42,88	G.
	☉ 2 L............	20,1	35,1	49,7	4,2	19,0	33,6	16 . 59 . 48,1		16 . 59 . 4,26	G.
	α Aquilæ.........	4,9	18,6	32,0	45,7	59,5	12,9	19 . 43 . 26,6		19 . 42 . 45,74	G.
	β Aquilæ.........	33,7	47,3	0,8	14,2	28,0	41,5	19 . 47 . 55,0		19 . 47 . 14,36	G.
	Mars 1 L.........	36,4	50,3	4,0	18,1	32,1	45,9	21 . 57 . 59,8		21 . 57 . 18,09	G.
	(l) Σ 4. *p.*...........	46,7	0,1	13,8	27,2	41,1	54,4	0 . 2 . 7,9		0 . 1 . 27,32	G.
	Polaris...........	38. 1,2	46.30,0	54.58,0	3.24,8	12. 4,4	20.27,8	1 . 28 . 59,6		1 . 3 . 29,40	G.
	103 Piscium......	46,6	0,7	14,6	28,5	42,8	56,6	1 . 31 . 10,7		1 . 30 . 28,65	G.
	ι Arietis..........	45,2	59,4	13,4	27,4	41,9	55,8	1 . 49 . 9,9		1 . 48 . 27,57	G.
	γ Andromedæ. *sp.*.	4,9	22,8	40,8	58,5	17,0	34,7	1 . 54 . 52,4		1 . 53 . 58,73	G.
	α Arietis.........	17,2	31,9	46,2	1,0	15,8	30,1	1 . 58 . 44,9		1 . 58 . 1,01	G.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(a) Not seen double. (b) Very difficult, but pretty accurate. (c) Excessively cloudy. (d) At wire VII. nearly hid by cloud. (e) Disturbed by noises. (f) Often very cloudy: several wires doubtful. (g) Faint: not seen double. (h) The preceding of two stars nearly equal: excessively faint. The *minutes* were verified. (i) The moon was quite full, the SL. being eclipsed. (k) Cloudy. (l) Exceedingly difficult and faint.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0^h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
− 0,89	+ 2,30	+ 2,90	30,81			0,32	21,30	1 . 48 . 52,13	− 5,08	ι Arietis.
			14,55					1 . 50 . 35,87	− 5,27	Σ 194.
			39,25					1 . 54 . 0,58	− 4,84	α Piscium. *sf.*
			4,16	25,50	21,34			1 . 58 . 25,49	− 5,28	α Arietis.
			15,30					5 . 21 . 36,67		Faye's Comet.
			1,64			0,28	21,63	0 . 37 . 23,28		☽ 1 L.
			30,97					0 . 54 . 52,61	− 4,60	ε Piscium.
			48,64					1 . 23 . 10,29	− 4,87	η Piscium.
			3,85	25,50	21,65					α Arietis.
			10,67	32,47	21,80	0,35	21,61	14 . 8 . 32,49	− 2,28	Arcturus.
			42,51	4,23	21,72			15 . 28 . 4,35	− 1,69	α Coronæ Borealis.
			47,92					16 . 32 . 9,77		☉'s center.
			48,14	10,11	21,97			19 . 43 . 10,04	− 2,67	α Aquilæ.
			16,88	38,82	21,94			19 . 47 . 38,78	− 2,73	β Aquilæ.
	+ 1,93		47,42	10,09	22,67	0,31	22,37	19 . 43 . 10,04	− 2,65	α Aquilæ.
			16,13	38,80	22,67			19 . 47 . 38,76	− 2,71	β Aquilæ.
			1,06	23,60	22,54			20 . 9 . 23,69	− 3,25	α^2 Capricorni.
		+ 3,98	46,97	9,84	22,87	0,32	22,95	2 . 54 . 9,96	− 5,09	α Ceti.
			57,46					3 . 55 . 20,46		☽ 1 L.
			38,23					4 . 17 . 1,24	− 5,92	υ^1 Tauri.
			37,74	0,82	23,08			4 . 27 . 0,75	− 5,70	Aldebaran.
			32,67					4 . 32 . 55,68	− 5,97	τ Tauri.
			41,61	4,68	23,07			5 . 7 . 4,63	− 4,96	Rigel.
			9,37	32,56	23,19	0,40	22,93	14 . 8 . 32,53	− 2,37	Arcturus.
			41,12	4,29	23,17			15 . 28 . 4,31	− 1,75	α Coronæ Borealis.
			9,78					16 . 49 . 32,99		☉'s center.
			46,75	10,08	23,33			19 . 43 . 10,01	− 2,64	α Aquilæ.
			15,53	38,79	23,26			19 . 47 . 38,79	− 2,70	β Aquilæ.
			0,46	23,59	23,13			20 . 9 . 23,73	− 3,24	α^2 Capricorni.
			50,62					22 . 56 . 13,93	− 3,62	β Pegasi.
			31,60				23,33	0 . 38 . 54,94	− 4,50	58 Piscium.
			41,89					0 . 42 . 5,23	− 4,52	Σ 63.
			34,88					0 . 57 . 58,23	− 5,69	μ Cassiopeiæ.
			28,06					1 . 11 . 51,41	− 4,57	42 Ceti.
			43,60					1 . 23 . 6,95	− 6,30	✱ N.P.D. 33°. 37′.
			28,74					1 . 48 . 52,10	− 5,06	ι Arietis.
			37,89					4 . 17 . 1,29	− 5,94	υ^1 Tauri.
			37,31	0,83	23,52			4 . 27 . 0,71	− 5,71	Aldebaran.
			32,30					4 . 32 . 55,71	− 5,97	τ Tauri.
			25,95					4 . 49 . 49,36		☽ 1 L.
			41,12					4 . 52 . 4,53		☽ 2 L.
			5,27	28,60	23,33			5 . 16 . 28,69	− 6,30	β Tauri.
			53,82			0,40	23,81	16 . 58 . 17,91		☉'s center.
			45,96	10,07	24,11			19 . 43 . 10,10	− 2,63	α Aquilæ.
			14,58	38,78	24,20			19 . 47 . 38,72	− 2,69	β Aquilæ.
			18,33					21 . 57 . 42,50		Mars 1 L.
			27,54				24,21	0 . 1 . 51,75	− 4,21	Σ 4. *p.*
			25,39	49,64	24,25					Polaris.
			28,86					1 . 30 . 53,09	− 4,91	103 Piscium.
			27,78					1 . 48 . 52,02	− 5,05	ι Arietis.
			58,88					1 . 54 . 23,12	− 5,87	γ Andromedæ. *sp.*
			1,21	25,47	24,26			1 . 58 . 25,45	− 5,25	α Arietis.

Dec. 5. 22^h, the Transit was levelled.

9—2

Month and Day.	NAME OF STAR or PLANET.	I.	II.	III.	IV.	V.	VI.	VII. Wire.	Correction for Wires omitted.	Concluded Transit over the Mean of the seven Wires.	Observer.
		m. s.	m. s.	m. s.	m. s.	m. s.	m. s.	h. m. s.	m. s.	h. m. s.	
Dec. 8	(a) Aldebaran........	54,2	8,1	22,2	36,2	50,5	4,2	4.27.18,3		4.26.36,24	G.
	Rigel............	59,7	13,0	26,4	40,0	54,0	7,5	5. 7.21,1		5. 6.40,24	G.
	β Tauri..........	18,2	33,7	48,9	4,0	19,9	35,0	5.16.50,1		5.16. 4,26	G.
	μ Geminorum.....	25,4	40,1	54,5	9,2	24,0	38,3	6.13.53,0		6.13. 9,22	G.
	γ Geminorum.....	37,3	51,8	5,7	19,7	33,8	47,9	6.29. 1,9		6.28.19,73	G.
	☽ 2 L............	6,1	20,8	35,5	50,5	5,6	20,0	6.43.35,0		6.42.50,50	G.
	ζ Geminorum.....	45,8	0,0	14,5	28,9	43,5	57,7	6.55.12,1		6.54.28,93	G.
	δ Geminorum.....	42,1	56,7	11,0	25,8	40,5	54,9	7.11. 9,2		7.10.25,74	G.
Dec. 11	(b) ☉ 1 L............	8,4	22,9	37,1	52,0	6,9	21,5	17.10.36,1		17. 9.52,13	G.
	☉ 2 L............	30,0	44,6	59,1	13,8	28,9	43,2	17.12.58,1		17.12.13,96	G.
	α Orionis.........	39,5	53,0	6,5	20,0	34,0	47,2	5.47. 0,8		5.46.20,14	G.
Dec. 12	(c) ☉ 1 L............	32,0	46,8	1,6	16,1	31,0	45,5	17.15. 0,2		17.14.16,17	G.
	☉ 2 L............	54,1	8,7	23,2	38,0	52,9	7,5	17.17.22,0		17.16.38,06	G.
	(d) δ Ursæ Minoris...	......	14.15,8	18. 1,2	21.45,9	25.37,6	29.22,8	18.33. 8,5	−1.53,45	18.21.48,52	G.
	α Aquilæ.........	3,2	16,9	30,3	44,0	57,7	11,4	19.43.25,0		19.42.44,07	G.
	α² Capricorni.....	......	30,1	44,0	57,7	11,8	25,4	20. 9.39,2	−6,92	20. 8.57,78	G.
Dec. 13	ε Bootis...........	58,5	13,8	28,8	44,0	59,6	14,7	14.38.29,9		14.37.44,18	G.
	(d) α² Libræ.........	7,4	21,5	35,3	49,3	3,5	17,2	14.42.31,2		14.41.49,35	G.
	α Coronæ Borealis.	53,0	8,2	23,2	38,4	53,8	8,8	15.28.24,0		15.27.38,49	G.
	α Serpentis........	28,2	41,6	55,2	8,8	22,7	36,1	15.36.49,5		15.36. 8,88	G.
Dec. 14	(e) ☉ 1 L............	21,8	36,6	51,2	5,8	21,0	35,4	17.23.50,0		17.23. 5,97	G.
	☉ 2 L............	43,9	58,7	13,2	28,0	43,0	57,4	17.26.12,1		17.25.28,05	G.
	Aldebaran.........	52,5	6,6	20,4	34,6	48,9	2,7	4.27.16,8		4.26.34,64	G.
Dec. 15	(f) ☉ 1 L............	47,0	1,6	16,1	31,0	45,9	0,5	17.28.15,2		17.27.31,04	G.
	☉ 2 L............	9,0	23,8	38,3	53,1	8,0	22,6	17.30.37,2		17.29.53,14	G.
	(f) γ Andromedæ. *sp.*	2,4	20,3	38,2	56,3	14,8	32,5	1.54.50,5		1.53.56,43	G.
	α Arietis.........	15,0	29,5	44,1	58,8	13,6	28,0	1.58.42,6		1.57.58,80	G.
	α Ceti............	2,6	16,1	29,5	43,0	56,8	10,1	2.54.23,7		2.53.43,11	G.
Dec. 22	(g) ☉ 1 L............	46,9	1,8	16,5	31,1	46,1	0,8	17.59.15,5		17.58.31,24	G.
	☉ 2 L............	9,6	24,3	39,0	53,8	8,7	23,1	18. 1.37,7		18. 0.53,74	G.
Dec. 23	☉ 1 L............	13,3	28,0	42,8	57,4	12,3	26,9	18. 3.41,7		18. 2.57,49	C.
	☉ 2 L............	35,7	50,4	5,1	19,9	34,7	49,5	18. 6. 4,1		18. 5.19,92	C.
	(h) Aldebaran........	......	1,2	15,2	29,2	43,5	57,3	4.27.11,5	− 7,01	4.26.29,31	C.
	(i) α Orionis.........	33,4	47,2	0,7	14,2	28,1	......	5.46.....	+13,57	5.46.14,29	C.

ILLUMINATED END OF AXIS EAST. Order of Wires for Stars above the Pole, *ABCDEFG*.

(*a*) All the wires, except the first, have been diminished 1ˢ. (*b*) Very much clouded: some wires without the dark glass. (*c*) Misty, but steady. (*d*) Faint. (*e*) Very misty. (*f*) Clouded. (*g*) Dark clouds passing. (*h*) Cloudy. Observed confusedly. The seconds not being taken from clock, were corrected after the observation. (*i*) After this day the weather was continually cloudy to the end of the year.

Error of Collimation.	Level Error.	Meridian Error.	Seconds of Transit corrected.	Tabular R.A. of Known Stars.	Clock apparently Slow.	Adopted losing Rate.	Clock Slow at 0h.	Apparent R.A. from the Observation.	Correction to mean R.A. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	″	″	s.	s.	s.	s.	s.	h. m. s.	s.	
– 0,89	+ 1,93	+ 3,98	36,45	0,85	24,40	0,40	24,21	4 . 27 . 0,73	– 5,78	Aldebaran.
			40,47	4,72	24,25			5 . 7 . 4,76	– 5,00	Rigel.
			4,44	28,63	24,19			5 . 16 . 28,74	– 6,33	β Tauri.
			9,42					6 . 13 . 33,73	– 6,00	μ Geminorum.
			19,94					6 . 28 . 44,26	– 5,71	γ Geminorum.
			50,71					6 . 43 . 15,03		☽ 2 L.
			29,14					6 . 54 . 53,46	– 5,80	ζ Geminorum.
			25,95					7 . 10 . 50,28	– 5,79	δ Geminorum.
	+ 2,41	+ 7,07	3,52			0,17	25,16	17 . 11 . 28,80		⊙'s center.
			20,54	45,91	25,37		25,33			α Orionis.
			27,59			0,14	25,35	17 . 15 . 53,04		⊙'s center.
			45,36	10,96	25,60					δ Ursæ Minoris.
			44,46	10,06	25,60					α Aquilæ.
			58,22	23,56	25,34					α² Capricorni.
			44,50	10,05	25,55	0,38	25,40	14 . 38 . 10,13	– 2,21	ε Bootis.
			49,81	15,45	25,64			14 . 42 . 15,44	– 3,23	α² Libræ.
			38,81	4,44	25,61			15 . 28 . 4,46	– 1,90	α Coronæ Borealis.
			9,27	34,98	25,71			15 . 36 . 34,92	– 2,57	α Serpentis.
			17,48					17 . 24 . 43,16		⊙'s center.
			35,01	0,89	25,88		25,78	4 . 27 . 0,86	– 5,77	Aldebaran.
			42,56			0,46	25,79	17 . 29 . 8,69		⊙'s center.
			56,67				26,25	1 . 54 . 22,96	– 5,80	γ Andromedæ. *sp.*
			59,14	25,43	26,29					α Arietis.
			43,51	9,82	26,31					α Ceti.
	+ 2,46		42,96			0,60	29,98	18 . 0 . 13,39		⊙'s center.
			9,18				30,58	18 . 4 . 40,21		⊙'s center.
			29,68	0,93	31,25		31,18			Aldebaran.
			14,69	46,05	31,36					α Orionis.

Dec. 14. 22h, and Dec. 22. 2h, the Transit was levelled.

APPARENT RIGHT ASCENSIONS

OF

POLARIS AND δ URSÆ MINORIS,

AND

MEAN RIGHT ASCENSIONS OF THE STARS

OBSERVED IN THE YEAR 1843,

AS DEDUCED FROM EACH DAY's OBSERVATION;

WITH

A CATALOGUE

OF THE

CONCLUDED MEAN RIGHT ASCENSIONS,

JANUARY 1, 1843.

POLARIS.

Day of Observation.	Apparent R.A.	Mean R.A. Jan. 1, 1843.	Day of Observation.	Apparent R.A.	Mean R.A. Jan. 1, 1843.
1843.	h. m. s.	h. m. s.	1843.	h. m. s.	h. m. s.
January 7	1 . 3 . 1,06	1 . 2 . 58,43	July 19	1 . 2 . 23,14	1 . 2 . 59,93
March 17	2 . 20,46	2 . 59,95	September 21	4 . 3,31	3 . 1,48
17	21,40	3 . 0,98	21	3,30	1,37
18	22,36	3 . 2,02	22	4 . 3,28	3 . 1,24
25	18,97	2 . 59,57	28	5,37	1,51
25	19,38	3 . 0,08	28	6,10	2,08
26	19,76	0,56	29	6,84	2,67
April 5	20,57	1,45	October 5	5,98	0,95
10	19,55	0,25	7	6,21	1,04
10	19,53	3 . 0,23	9	8,41	2,91
16	19,36	2 . 58,74	12	7,50	1,44
17	19,23	58,44	14	7,02	0,82
17	20,43	2 . 59,49	15	6,57	0,35
18	22,97	3 . 1,89	18	9,57	3,65
30	26,42	1,30	19	8,04	2,18
			19	6,38	0,59
May 1	28,18	2,81	26	7,28	1,69
1	29,97	4,34	28	6,44	1,04
3	29,01	2,40			
4	29,24	2,39	November 3	7,57	3,80
10	31,02	1,61	4	7,45	3,79
10	33,02	3 . 3,34	7	3,90	0,81
11	30,04	2 . 59,76	15	3,39	3,13
			16	2,28	2,25
June 4	47,71	3 . 1,40	16	4 . 1,21	1,40
5	47,98	1,34	26	3 . 58,93	3,33
			27	58,64	3,33
July 14	17,35	2 . 58,53	28	57,04	2,65
19	1 . 2 . 25,45	1 . 3 . 2,24	29	1 . 3 . 56,77	1 . 3 . 2,68

δ URSÆ MINORIS.

Day of Observation.	Apparent R.A.	Mean R.A. Jan. 1, 1843.	Day of Observation.	Apparent R.A.	Mean R.A. Jan. 1, 1843.
1843.	h. m. s.	h. m. s.	1843.	h. m. s.	h. m. s.
January 1	18 . 22 . 27,44	18 . 22 . 57,06	August 2	18 . 22 . 58,04	18 . 22 . 57,54
2	27,26	56,90	2	58,08	57,71
8	26,35	55,85	4	57,10	57,32
9	26,51	55,98	5	56,96	57,33
9	26,20	55,67	10	55,35	57,33
12	28,49	57,84	10	55,31	57,44
15	29,37	58,61	11	55,21	57,48
16	29,42	58,63	11	54,94	57,36
			12	54,50	57,07
February 10	33,12	58,19	18	52,11	56,56
13	34,29	58,70	18	52,66	57,29
16	35,26	58,68	19	53,16	57,98
21	34,64	56,72	22	51,42	57,59
22	36,16	57,98	24	50,81	57,54
23	36,30	57,85			
			September 1	46,88	56,45
March 3	37,67	56,70	2	46,43	56,43
4	39,22	57,88	3	46,23	56,86
7	40,94	58,57	4	46,00	56,85
8	22 . 40,30	57,61	7	44,32	56,36
			12	43,60	57,52
July 15	23 . 1,63	57,15	12	43,47	57,59
15	1,31	56,83	20	40,55	58,16
24	18 . 23 . 2,46	18 . 22 . 59,75	23	18 . 22 . 39,37	18 . 22 . 57,97

α ANDROMEDÆ.

Date	h. m. s.
Jan. 7	0. 0. 17,00
Feb. 13	17,12
Mar. 7	17,00
28	17,00
April 9	17,04
10	17,03
30	17,17
May 1	17,12
Sept. 9	17,07
20	16,98
21	16,98
22	17,01
27	17,06
28	17,06
Oct. 5	16,97
9	17,06
21	17,08
Nov. 3	17,08
8	17,15
11	17,15
29	17,13

Σ 1.

Date	h. m. s.
Nov. 18	0. 0. 45,74
20	45,78

Σ 4.

Date	h. m. s.
Nov. 29	0. 1. 47,45
Dec. 8	47,54

34 Piscium.

Date	h. m. s.
Nov. 24	0. 1. 58,30

38 Piscium.

Date	h. m. s.
Oct. 21	0. 9. 19,60
Nov. 20	19,48

Σ 24.

Date	h. m. s.
Oct. 20	0. 10. 21,95
Nov. 24	22,02
29	22,09

Σ 25.

Date	h. m. s.
Nov. 18	0. 10. 36,29

d Piscium.

Date	h. m. s.
Sept. 9	0. 12. 31,62

* N.P.D. 78°. 20′.

Date	h. m. s.
Oct. 21	0. 38. 44,51
Nov. 18	44,43

58 Piscium.

Date	h. m. s.
Oct. 20	0. 38. 50,58
Nov. 20	50,40
Dec. 6	50,44

δ Piscium.

Date	h. m. s.
Jan. 7	0. 40. 32,50

Σ 63.

Date	h. m. s.
Nov. 20	0. 42. 0,69
29	0,76
Dec. 6	0,71

Piazzi O. 208.

Date	h. m. s.
Oct. 21	0. 43. 22,19
Nov. 18	22,14

B.A.C. 258.

Date	h. m. s.
Oct. 21	0. 47. 55,54
Nov. 11	55,45
18	55,44
20	55,36
29	55,39

ε Piscium.

Date	h. m. s.
Dec. 1	0. 54. 48,01

μ Cassiopeiæ.

Date	h. m. s.
Nov. 18	0. 57. 52,63
29	52,68
Dec. 6	52,54

φ Piscium.

Date	h. m. s.
Jan. 30	1. 5. 14,32
Oct. 21	14,23
Nov. 18	14,30

42 Ceti.

Date	h. m. s.
Oct. 21	1. 11. 46,98
Nov. 18	46,83
Dec. 6	46,84

* N.P.D. 33°. 37′.

Date	h. m. s.
Dec. 6	1. 23. 0,65

η Piscium.

Date	h. m. s.
Oct. 9	1. 23. 5,47
Nov. 4	5,43
23	5,64
29	5,56
Dec. 1	5,42

101 Piscium.

Date	h. m. s.
Nov. 11	1. 27. 23,25
23	23,31
29	23,29

103 Piscium.

Date	h. m. s.
Nov. 11	1. 30. 48,30
18	48,22
29	48,26
Dec. 8	48,18

105 Piscium.

Date	h. m. s.
Nov. 23	1. 31. 13,31

Σ 162.

Date	h. m. s.
Jan. 30	1. 39. 32,70

4 Arietis.

Date	h. m. s.
Nov. 11	1. 39. 40,64
18	40,59
23	40,69
29	40,56

γ Arietis.

Date	h. m. s.
Nov. 11	1. 44. 55,65
18	55,64
23	55,71

β Arietis.

Date	h. m. s.
July 19	1. 45. 58,73
Oct. 9	58,69

ι Arietis.

Date	h. m. s.
Nov. 11	1. 48. 47,11
23	47,19
29	47,05
Dec. 6	47,04
8	46,97

Σ 194.

Date	h. m. s.
Nov. 23	1. 50. 30,75
29	30,60

α Piscium.

Date	h. m. s.
Nov. 11	1. 53. 55,77
23	55,84
29	55,74

γ Andromedæ.

Date	h. m. s.
Dec. 8	1. 54. 17,25
15	17,16

α ARIETIS.

Date	h. m. s.
Jan. 7	1. 58. 20,22
10	20,16
30	20,39
Feb. 13	20,23
Mar. 7	20,22
18	20,23
29	20,14
April 11	20,17
30	20,17
May 1	20,10
21	20,10
June 4	20,23
July 19	20,17
Oct. 21	20,14
Nov. 7	20,22
8	20,18
11	20,25
18	20,26
23	20,36
29	20,21
Dec. 8	20,20

θ¹ Arietis.

Date	h. m. s.
Jan. 10	2. 9. 24,12
Oct. 9	24,17
21	24,29
Nov. 6	23,92
23	24,39

Σ 274.

	h. m. s.
Nov. 23	2 . 23 . 26,18

ν Arietis.

	h. m. s.
Oct. 9	2 . 29 . 54,67

μ Arietis.

	h. m. s.
Nov. 23	2 . 33 . 31,63

γ Ceti.

	h. m. s.
Jan. 30	2 . 35 . 10,44
31	10,34
Feb. 13	10,35
July 19	10,39

ε Arietis.

	h. m. s.
Nov. 7	2 . 50 . 14,97

α CETI.

	h. m. s.
Jan. 7	2 . 54 . 4,80
30	4,85
Feb. 13	4,81
Mar. 7	4,79
July 19	4,82
Sept. 21	4,83
Oct. 21	4,78
Nov. 8	4,66
23	4,70
Dec. 5	4,87

ι Persei.

	h. m. s.
Jan. 31	2 . 57 . 46,19
Feb. 13	46,20

δ Arietis.

	h. m. s.
Nov. 7	3 . 2 . 39,82

Σ 401.

	h. m. s.
Jan. 30	3 . 21 . 53,05
31	52,95
Feb. 13	52,99

e Pleiadum.

	h. m. s.
Jan. 30	3 . 35 . 52,50

η Tauri.

	h. m. s.
Jan. 12	3 . 38 . 9,78
30	9,85
Aug. 18	9,71
Nov. 7	9,80
8	9,78

γ¹ Eridani.

	h. m. s.
Jan. 16	3 . 50 . 42,44

A¹ Tauri.

	h. m. s.
Jan. 12	3 . 55 . 25,43
Nov. 7	25,37
8	25,41

Σ 520.

	h. m. s.
Feb. 1	4 . 8 . 53,94

υ¹ Tauri.

	h. m. s.
Dec. 5	4 . 16 . 55,32
6	55,35

Σ 559. *p.*

	h. m. s.
Feb. 13	4 . 24 . 28,00
Mar. 4	27,94

Σ 559. *f.*

	h. m. s.
Nov. 23	4 . 24 . 28,18

ALDEBARAN.

	h. m. s.
Jan. 2	4 . 26 . 55,18
12	55,13
30	55,14
Mar. 3	55,16
4	55,20
8	55,10
May 1	55,01
2	55,14
June 14	55,08
20	55,17
22	55,10
July 6	54,99

ALDEBARAN *continued.*

	h. m. s.
Aug. 18	4 . 26 . 55,16
Nov. 7	55,14
8	55,22
11	55,09
23	55,08
Dec. 5	55,05
6	55,00
8	55,00
14	55,09

2 Camelopardali.

	h. m. s.
Feb. 13	4 . 27 . 32,82

τ Tauri.

	h. m. s.
Aug. 18	4 . 32 . 49,79
Nov. 8	49,85
Dec. 5	49,71
6	49,74

ι Tauri.

	h. m. s.
Jan. 12	4 . 53 . 43,02
Mar. 8	43,02
Aug. 18	42,90

ρ Orionis.

	h. m. s.
Feb. 21	5 . 5 . 5,19
23	5,16

RIGEL.

	h. m. s.
Jan. 4	5 . 6 . 59,73
10	59,76
12	59,68
Feb. 10	59,76
17	59,67
Mar. 3	59,73
4	59,72
8	59,72
April 20	59,77
May 1	59,81
2	59,75
20	59,75
June 14	59,73
15	59,70
20	59,74
22	59,71
July 31	59,74
Aug. 18	59,74

RIGEL *continued.*

	h. m. s.
Nov. 23	5 . 6 . 59,68
Dec. 5	59,67
8	59,76

n Tauri.

	h. m. s.
Jan. 12	5 . 9 . 50,92
Mar. 8	50,93

β TAURI.

	h. m. s.
Jan. 4	5 . 16 . 22,26
10	22,30
12	22,30
16	22,33
Feb. 17	22,37
Mar. 8	22,33
April 5	22,29
20	22,30
May 1	22,38
4	22,41
20	22,37
June 14	22,15
July 18	22,29
19	22,28
23	22,27
31	22,35
Aug. 18	22,27
Dec. 6	22,39
8	22,41

γ Orionis.

	h. m. s.
Feb. 21	5 . 16 . 42,83
23	42,76
Mar. 18	42,89

33 Orionis.

	h. m. s.
Feb. 21	5 . 23 . 0,51

Σ 734.

	h. m. s.
Feb. 21	5 . 25 . 11,38
23	11,33

α Leporis.

	h. m. s.
Jan. 16	5 . 25 . 48,44

θ¹ Orionis.

	h. m. s.
Jan. 4	5 . 27 . 33,19

125 Tauri.

Feb. 21	5 . 30 . 0,57
Mar. 18	0,58

Σ 758.

Feb. 23	5 . 30 . 7,60
Mar. 3	7,63
4	7,69

α ORIONIS.

Jan. 4	5 . 46 . 40,46
16	40,48
Feb. 10	40,41
22	40,46
Mar. 18	40,57
May 4	40,44
20	40,33
June 16	40,41
20	40,33
July 18	40,27

β Aurigæ.

Feb. 13	5 . 48 . 0,88
Mar. 4	0,94
8	0,87

Σ 840.

Jan. 4	5 . 57 . 45,83

Piazzi VI. 62.

Mar. 18	6 . 11 . 51,17

μ Geminorum.

Feb. 10	6 . 13 . 27,69
May 3	27,89
Dec. 8	27,73

51 (Hev.) Cephei.

Mar. 3	6 . 24 . 58,58
4	58,00
7	56,91
8	58,47

γ Geminorum.

	h. m. s.
Dec. 8	6 . 28 . 38,55

Σ 953.

Mar. 18	6 . 32 . 34,28

ε Geminorum.

Feb. 10	6 . 34 . 16,22
Mar. 23	16,27
Aug. 20	16,25

Sirius.

Jan. 18	6 . 38 . 14,05
Feb. 10	13,91
23	13,92
Aug. 20	13,94

ω¹ Geminorum.

Mar. 1	6 . 52 . 50,65
17	50,71
23	50,71

ζ Geminorum.

Dec. 8	6 . 54 . 47,66

δ Geminorum.

Jan. 24	7 . 10 . 44,45
28	44,73
Dec. 8	44,49

Σ 1083.

Jan. 2	7 . 16 . 18,55

CASTOR.

Jan. 16	7 . 24 . 34,36
17	34,40
Feb. 2	34,41
Mar. 4	34,39
17	34,41
20	34,45
23	34,39
25	34,41
June 15	34,53
Aug. 10	34,31
11	34,33

CASTOR *continued.*

	h. m. s.
Aug. 18	7 . 24 . 34,32
20	34,37
Sept. 1	34,26
3	34,31
12	34,45

PROCYON.

Jan. 12	7 . 31 . 4,88
16	4,86
17	4,91
Feb. 2	4,79
10	4,88
13	4,81
15	4,88
Mar. 1	4,82
2	4,84
3	4,81
4	4,83
8	4,87
17	4,86
20	4,85
23	4,88
25	4,85
28	4,84
May 2	4,76
June 15	4,72
16	4,82
Aug. 10	4,81
18	4,89
20	4,87
Sept. 1	4,82
3	4,86
12	4,87

POLLUX.

Jan. 2	7 . 35 . 42,07
17	42,01
Feb. 2	42,04
10	41,99
13	42,06
15	42,07
Mar. 1	42,01
2	42,03
3	41,95
4	42,05
7	41,98
8	42,02
17	42,09
20	42,01
23	41,99
25	42,04
28	41,98
May 2	42,12
June 15	42,11
16	42,19
Aug. 10	41,95

POLLUX *continued.*

	h. m. s.
Aug. 11	7 . 35 . 41,93
18	41,91
20	42,01
Sept. 1	41,94
3	42,00
12	41,96

Σ 1177.

Feb. 13	7 . 55 . 59,18
14	59,16
Mar. 2	59,18

μ¹ Cancri.

Jan. 16	7 . 56 . 59,60

11 Cancri.

Mar. 2	7 . 59 . 12,81

ζ Cancri.

Jan. 16	8 . 3 . 12,05

φ² Cancri.

Mar. 20	8 . 17 . 16,77
23	16,81

θ Cancri.

Feb. 13	8 . 22 . 38,23

Σ 1244.

Mar. 20	8 . 27 . 8,26
23	8,38

δ Cancri.

Feb. 13	8 . 35 . 45,28

ε Hydræ.

Jan. 24	8 . 38 . 27,43
Feb. 14	27,31

o² Cancri.

April 12	8 . 48 . 48,73
17	48,68

α² Cancri.

Jan. 16	8 . 49 . 53,67
17	53,74
Oct. 17	53,71

κ Cancri.

	h. m. s.
Jan. 16	8 . 59 . 14,24
17	14,30

α Hydræ.

	h. m. s.
Jan. 30	9 . 19 . 52,02
Feb. 15	52,25
22	52,25
Mar. 1	52,33
2	52,31
3	52,39
17	52,29
18	52,27
28	52,35
April 11	52,36
17	52,46
Oct. 17	52,22
18	52,28

*** N.P.D. 69°. 51′.**

	h. m. s.
Mar. 23	9 . 21 . 10,47
25	10,57

ξ Leonis.

	h. m. s.
Feb. 14	9 . 23 . 28,81

14 Leonis.

	h. m. s.
Feb. 14	9 . 32 . 45,87
Oct. 17	45,95
18	46,10

ψ Leonis.

	h. m. s.
Mar. 21	9 . 35 . 10,54
25	10,60

π Leonis.

	h. m. s.
Mar. 21	9 . 51 . 54,72
25	54,78

Regulus.

	h. m. s.
Jan. 17	10 . 0 . 0,31
Feb. 2	0,40
22	0,39
Mar. 1	0,40
2	0,36
18	0,28
23	0,39
25	0,33
April 5	0,42

Regulus *continued.*

	h. m. s.
April 17	10 . 0 . 0,44
20	0,39
24	0,45
May 1	0,23
June 17	0,30
Sept. 5	0,31
27	0,31
28	0,31
Oct. 12	0,36
13	0,41
17	0,32
18	0,39
Nov. 15	0,28

Piazzi X. 67.

	h. m. s.
April 5	10 . 17 . 18,83

ρ Leonis.

	h. m. s.
Feb. 14	10 . 24 . 32,34
Oct. 18	32,47

34 Sextantis.

	h. m. s.
Feb. 14	10 . 34 . 30,81

***d* Leonis.**

	h. m. s.
Nov. 15	10 . 52 . 27,09

*** N.P.D. 80°. 17′.**

	h. m. s.
Mar. 23	10 . 54 . 4,44
April 17	4,42

Σ 1507.

	h. m. s.
Mar. 23	10 . 57 . 58,40
April 17	58,36
20	58,37

p^3 Leonis.

	h. m. s.
April 18	10 . 58 . 53,70
21	53,67
24	53,72
25	53,51

Σ 1521.

	h. m. s.
April 17	11 . 6 . 55,36

φ Leonis.

	h. m. s.
Nov. 15	11 . 8 . 40,90

ξ Ursæ Majoris.

	h. m. s.
April 21	11 . 9 . 47,48
24	47,62
May 4	47,65

ν Ursæ Majoris.

	h. m. s.
April 17	11 . 9 . 59,05
18	59,05
20	58,98

ι Leonis.

	h. m. s.
April 5	11 . 15 . 44,36
10	44,28

83 Leonis.

	h. m. s.
April 5	11 . 18 . 48,61
17	48,53
20	48,46

τ Leonis.

	h. m. s.
Feb. 15	11 . 19 . 51,65
April 12	51,76
June 5	51,70

υ Leonis.

	h. m. s.
Feb. 15	11 . 28 . 54,56
April 12	54,62
May 10	54,63

Σ 1565.

	h. m. s.
April 17	11 . 31 . 26,79
20	26,75
21	26,61

Σ 1566.

	h. m. s.
April 24	11 . 32 . 27,97
25	27,98

β Leonis.

	h. m. s.
Mar. 17	11 . 41 . 2,95
April 5	2,93
10	2,94
17	2,92

β Leonis *continued.*

	h. m. s.
April 18	11 . 41 . 3,05
20	2,94
21	2,73
24	2,93
25	2,80
May 3	2,80
4	2,77
10	2,84
13	2,75
Sept. 28	2,95
Oct. 15	2,90
17	2,88
18	2,87
Nov. 15	2,94

β Virginis.

	h. m. s.
May 10	11 . 42 . 31,03

B.A.C. 4006.

	h. m. s.
April 17	11 . 43 . 0,90
20	0,90
21	0,74
24	0,86

η Virginis.

	h. m. s.
April 13	12 . 11 . 52,44
June 6	52,61

Σ 1633.

	h. m. s.
April 10	12 . 12 . 46,31
May 4	46,22

Σ 1634.

	h. m. s.
May 13	12 . 12 . 47,12

***q* Virginis.**

	h. m. s.
April 13	12 . 25 . 40,78

Piazzi XII. 202.

	h. m. s.
April 10	12 . 44 . 8,85
May 3	8,84

ψ Virginis.

	h. m. s.
Mar. 17	12 . 46 . 11,65
May 10	11,75

Σ 1690.

	h. m. s.
April 10	12 . 48 . 9,69

ε Virginis.

April 10	12 . 54 . 21,90
May 1	21,59
3	21,71

α Comæ Berenices.

May 3	13 . 2 . 21,03
June 3	20,89

⁎ N.P.D. 97° . 13′.

April 10	13 . 7 . 19,31
May 1	19,24

Σ 1734.

April 10	13 . 12 . 43,81

Σ 1742.

May 1	13 . 16 . 18,41
June 3	18,49

SPICA.

April 5	13 . 16 . 55,80
10	55,85
17	55,66
20	55,74
24	55,85
May 3	55,86
10	55,82
13	55,79
June 5	55,73
10	55,81
Aug. 1	55,83
18	55,82
Sept. 2	55,74
4	55,84
13	55,78

⁎ N.P.D. 97° . 3′.

May 1	13 . 22 . 41,49
13	41,56

⁎ N.P.D. 97° . 49′.

May 1	13 . 26 . 4,57
13	4,56

m Virginis.

	h. m. s.
May 1	13 . 33 . 22,68
13	22,72
June 1	22,69

Piazzi XIII. 163.

June 5	13 . 33 . 24,31

⁎ N.P.D. 98° . 33′.

May 1	13 . 36 . 21,77
13	21,89

⁎ N.P.D. 98° . 55′.

May 1	13 . 38 . 55,97
13	56,01
June 1	56,03

x Virginis.

Mar. 17	13 . 41 . 21,11

Σ 1804.

June 3	14 . 0 . 55,88

κ Virginis.

Mar. 17	14 . 4 . 31,72

Σ 1823.

June 1	14 . 8 . 8,34

ARCTURUS.

April 18	14 . 8 . 30,16
24	30,11
May 3	30,20
10	30,19
11	30,09
22	30,23
25	30,18
29	30,13
June 3	30,18
5	30,23
6	30,10
17	30,27
23	30,21
28	30,20
July 7	30,28
15	30,10
Aug. 12	30,20
14	30,11
18	30,14
19	30,14

ARCTURUS *continued.*

	h. m. s.
Sept. 1	14 . 8 . 30,11
2	30,12
4	30,13
7	30,12
8	30,08
9	30,04
15	30,17
16	30,12
18	30,17
20	30,22
21	30,16
29	30,12
Oct. 7	30,14
14	30,10
16	30,14
19	30,13
Nov. 3	30,17
10	30,15
26	30,16
28	30,16
Dec. 1	30,21
5	30,16

Σ 1847.

May 10	14 . 20 . 15,83
June 3	15,73

Σ 1850.

May 3	14 . 21 . 38,53

Σ 1858.

May 3	14 . 27 . 9,27
10	9,15
29	9,21

ε BOOTIS.

April 18	14 . 38 . 7,73
25	7,95
May 1	7,83
3	7,94
10	7,90
13	7,88
22	7,90
25	7,85
29	7,81
June 1	7,90
6	7,96
10	7,95
28	7,86
Aug. 11	7,86
21	7,88
Sept. 5	7,77
7	7,72
18	7,74

ε BOOTIS *continued.*

	h. m. s.
Oct. 19	14 . 38 . 7,84
Nov. 8	7,91
17	7,91
26	7,84
27	7,90
28	7,86
Dec. 13	7,92

Σ 1879.

June 3	14 . 38 . 36,35
5	36,38

α^2 LIBRÆ.

April 25	14 . 42 . 12,30
May 3	12,21
4	12,23
10	12,37
13	12,16
25	12,24
29	12,29
June 1	12,22
3	12,29
5	12,22
6	12,20
28	12,10
July 7	12,27
Aug. 11	12,20
Dec. 13	12,21

Σ 1886.

June 5	14 . 43 . 26,91
10	26,95

20 Libræ.

May 13	14 . 54 . 53,70

β Bootis.

May 29	14 . 56 . 1,99
Aug. 11	1,89
18	1,91

ι^1 Libræ.

June 10	15 . 3 . 17,00

Σ 1921.

June 3	15 . 5 . 59,31

Σ 1934.

	h. m. s.
June 3	15 . 11 . 52,49

∗ N.P.D. 84° . 12′.

	h. m. s.
June 3	15 . 18 . 59,07
17	59,18

Σ 1943.

	h. m. s.
June 3	15 . 19 . 51,48

Σ 1952.

	h. m. s.
June 1	15 . 24 . 21,77
3	21,59

α CORONÆ BOREALIS.

	h. m. s.
May 13	15 . 28 . 2,58
29	2,64
June 1	2,52
3	2,57
5	2,67
10	2,54
July 19	2,59
Aug. 5	2,49
7	2,54
17	2,51
Sept. 5	2,46
15	2,59
23	2,56
Oct. 7	2,56
14	2,57
Nov. 4	2,59
9	2,54
26	2,66
27	2,59
28	2,69
Dec. 1	2,66
5	2,56
13	2,56

χ Libræ.

	h. m. s.
June 5	15 . 31 . 0,82

Σ 1963.

	h. m. s.
May 29	15 . 31 . 30,76

κ Libræ.

	h. m. s.
June 10	15 . 32 . 54,68

α SERPENTIS.

	h. m. s.
May 29	15 . 36 . 32,32
June 1	32,36
3	32,28
10	32,35
17	32,35
Aug. 17	32,43
Sept. 5	32,31
16	32,40
22	32,42
23	32,41
28	32,42
Oct. 7	32,45
Nov. 18	32,44
28	32,36
Dec. 13	32,35

β Serpentis.

	h. m. s.
May 29	15 . 38 . 56,63
July 19	56,80
Aug. 2	56,76
7	56,80

Σ 1985.

	h. m. s.
June 17	15 . 47 . 47,13

ζ Ursæ Minoris.

	h. m. s.
Aug. 14	15 . 49 . 47,45
19	47,89
24	47,45

δ Scorpii.

	h. m. s.
May 13	15 . 51 . 3,76
Aug. 7	3,67
11	3,63

β¹ Scorpii.

	h. m. s.
July 7	15 . 56 . 19,04
8	19,09

Σ 2011.

	h. m. s.
June 17	16 . 1 . 18,90

δ OPHIUCHI.

	h. m. s.
June 16	16 . 6 . 7,34
17	7,42
22	7,44

δ OPHIUCHI *continued.*

	h. m. s.
June 26	16 . 6 . 7,40
July 7	7,37
15	7,48
17	7,44
19	7,53
Aug. 2	7,33
5	7,40
7	7,38
11	7,46
18	7,39
19	7,52
31	7,43
Sept. 1	7,44

σ Scorpii.

	h. m. s.
May 13	16 . 11 . 39,46
Aug. 31	39,34

ANTARES.

	h. m. s.
May 13	16 . 19 . 47,68
June 10	47,50
16	47,40
22	47,60
26	47,45
28	47,43
Aug. 2	47,38
7	47,45
11	47,49
12	47,52
14	47,45
16	47,46
17	47,48
18	47,50
19	47,49
21	47,38
26	47,44
31	47,56
Sept. 1	47,54
2	47,62
5	47,46
7	47,59
9	47,52
20	47,47
28	47,43
Oct. 28	47,49

τ Scorpii.

	h. m. s.
June 22	16 . 26 . 7,19
July 19	7,16
Aug. 7	7,10
11	7,13
12	7,14
14	7,07

Σ 2087.

	h. m. s.
June 22	16 . 35 . 59,36

∗ N.P.D. 115° . 20′.

	h. m. s.
June 15	16 . 42 . 38,59
22	38,58

56 Herculis.

	h. m. s.
June 20	16 . 48 . 36,77
22	36,91

31 Ophiuchi.

	h. m. s.
June 3	16 . 55 . 4,43

Σ 2120.

	h. m. s.
June 20	16 . 58 . 32,36
26	32,37
28	32,34

∗ N.P.D. 89° . 27′

	h. m. s.
June 28	17 . 4 . 53,29

α HERCULIS.

	h. m. s.
Jan. 9	17 . 7 . 29,48
June 3	29,48
5	29,45
15	29,56
20	29,50
22	29,43
26	29,49
28	29,58
July 14	29,50
15	29,49
17	29,49
Aug. 2	29,50
5	29,56
12	29,54
14	29,45
16	29,51
21	29,56
26	29,53
31	29,47
Sept. 1	29,52
2	29,60
8	29,51
12	29,45
18	29,53
28	29,53
29	29,52
Oct. 21	29,49
Nov. 3	29,51
20	29,50
28	29,46

B.A.C. 5831.

	h. m. s.
July 21	17 . 8 . 31,96
Aug. 7	32,05

Σ 2147.

	h. m. s.
June 20	17 . 11 . 26,36

⁎ N.P.D. 60° . 55′.

	h. m. s.
June 26	17 . 11 . 47,46
28	47,38
July 7	47,45

θ Ophiuchi.

	h. m. s.
Sept. 1	17 . 12 . 22,38
2	22,63
28	22,28

y Ophiuchi.

	h. m. s.
July 21	17 . 13 . 28,92
Aug. 2	28,93
7	29,06
12	29,18
14	29,03

Piazzi XVII. 94.

	h. m. s.
June 20	17 . 17 . 29,37

e^2 Ophiuchi.

	h. m. s.
Sept. 2	17 . 21 . 50,55

Σ 2178.

	h. m. s.
July 17	17 . 23 . 51,43
19	51,47

α Ophiuchi.

	h. m. s.
June 15	17 . 27 . 39,04
20	38,89
22	38,90
July 7	39,05
14	38,98
15	39,01
17	38,94
21	38,97
Aug. 2	38,96
5	39,00
7	39,01
10	38,96
18	39,07

α Ophiuchi *continued.*

	h. m. s.
Aug. 24	17 . 27 . 38,95
25	39,05
26	38,91
31	38,97
Sept. 1	38,96
2	39,06
4	39,12
5	39,05
6	38,97
7	39,03
8	38,96
9	38,99
12	38,95
15	39,07
Oct. 13	39,05
Nov. 20	39,00
28	39,00

D Ophiuchi.

	h. m. s.
Aug. 5	17 . 34 . 1,58

Σ 2213.

	h. m. s.
June 15	17 . 38 . 55,37
20	55,35

⁎ N.P.D. 48° . 12′.

	h. m. s.
July 15	17 . 46 . 15,48
21	15,30

⁎ N.P.D. 48° . 16′.

	h. m. s.
Aug. 7	17 . 46 . 37,86

4 Sagittarii.

	h. m. s.
Aug. 5	17 . 50 . 12,50

70 Ophiuchi.

	h. m. s.
July 14	17 . 57 . 31,28
15	31,27

Σ 2278 (1st star).

	h. m. s.
Aug. 18	18 . 0 . 6,97
19	7,08
Sept. 2	6,75

Σ 2278 (2nd star).

	h. m. s.
Sept. 5	18 . 0 . 8,51

Σ 2296.

	h. m. s.
July 14	18 . 7 . 27,70
17	27,65
Aug. 5	27,60

g Sagittarii.

	h. m. s.
July 21	18 . 8 . 13,39
Aug. 7	13,63
10	13,60
11	13,68

λ Sagittarii.

	h. m. s.
Sept. 2	18 . 18 . 17,13

⁎ N.P.D. 71° . 50′.

	h. m. s.
July 21	18 . 20 . 28,92
Aug. 5	28,80
7	28,97

e Serpentis.

	h. m. s.
July 21	18 . 23 . 50,59
Aug. 5	50,66
7	50,61
10	50,59

⁎ N.P.D. 38° . 23′.

	h. m. s.
Aug. 7	18 . 30 . 12,98
10	12,85

φ Sagittarii.

	h. m. s.
Sept. 2	18 . 35 . 50,96

Σ 2369.

	h. m. s.
Aug. 21	18 . 36 . 3,06
Sept. 4	2,93
5	2,93

Σ 2375.

	h. m. s.
July 21	18 . 37 . 45,38
Aug. 2	45,39

Σ 2400.

	h. m. s.
Aug. 31	18 . 41 . 52,43
Sept. 7	52,53
8	52,56

Σ 2402.

	h. m. s.
Aug. 18	18 . 42 . 20,47
Sept. 2	20,45
5	20,35

⁎ N.P.D. 79° . 34′.

	h. m. s.
Aug. 19	18 . 42 . 36,26
Sept. 16	36,24
23	36,19

Σ 2409.

	h. m. s.
July 21	18 . 44 . 30,17

Σ 2408.

	h. m. s.
Aug. 22	18 . 44 . 34,35
31	34,31
Sept. 4	34,40

σ Sagittarii.

	h. m. s.
Aug. 7	18 . 45 . 31,65

Σ 2415.

	h. m. s.
June 20	18 . 47 . 47,20

Σ 2422.

	h. m. s.
June 20	18 . 50 . 44,85

Σ 2437.

	h. m. s.
Aug. 22	18 . 55 . 1,17
Sept. 2	1,32
4	1,18

⁎ N.P.D. 71° . 6′.

	h. m. s.
Aug. 31	18 . 55 . 4,32
Sept. 5	4,38
7	4,39

o Sagittarii.

	h. m. s.
Aug. 7	18 . 55 . 16,34
Oct. 28	16,42

⁎ N.P.D. 66° . 52′.

	h. m. s.
Sept. 2	18 . 57 . 6,45
7	6,46

∗ N.P.D. 66°.52′ *continued.*

Date	h. m. s.
Sept. 8	18 . 57 . 6,42
12	6,38
23	6,42

Σ 2448.

Date	h. m. s.
Aug. 2	18 . 58 . 2,00
10	2,22

Σ 2445.

Date	h. m. s.
Aug. 22	18 . 58 . 2,88
Sept. 4	2,92
5	2,73

ζ Aquilæ.

Date	h. m. s.
June 20	18 . 58 . 11,82
July 14	11,67

∗ N.P.D. 54°.27′.

Date	h. m. s.
Aug. 14	18 . 58 . 30,04
18	30,13
19	30,15

Σ 2449.

Date	h. m. s.
July 21	18 . 58 . 45,47
Aug. 7	45,37
11	45,53

17 Lyræ.

Date	h. m. s.
Aug. 22	19 . 1 . 29,37
Sept. 2	29,44
4	29,45

ψ Sagittarii.

Date	h. m. s.
June 20	19 . 5 . 54,68
July 21	54,47
31	54,85
Aug. 2	54,65
7	54,51

Σ 2482.

Date	h. m. s.
Sept. 4	19 . 6 . 8,84
5	8,72
7	8,75

Σ 2484.

Date	h. m. s.
Oct. 6	19 . 7 . 21,39

Σ 2489.

Date	h. m. s.
Sept. 23	19 . 9 . 15,50
27	15,48
Oct. 6	15,43

Σ 2490.

Date	h. m. s.
Sept. 7	19 . 9 . 44,98
8	45,10
12	45,00

ρ^1 Sagittarii.

Date	h. m. s.
Sept. 4	19 . 12 . 33,97

Piazzi XIX. 85.

Date	h. m. s.
July 14	19 . 14 . 18,18

∗ N.P.D. 62°.56′.

Date	h. m. s.
Aug. 10	19 . 20 . 9,67
11	9,71
12	9,40

Σ 2525.

Date	h. m. s.
June 20	19 . 20 . 10,78
July 14	10,74
21	10,76
31	10,89
Aug. 2	10,70

e^1 Sagittarii.

Date	h. m. s.
Oct. 28	19 . 31 . 43,52

e^2 Sagittarii.

Date	h. m. s.
Sept. 4	19 . 33 . 32,34

Σ 2576.

Date	h. m. s.
July 21	19 . 39 . 35,61

57 Sagittarii.

Date	h. m. s.
Oct. 28	19 . 43 . 4,27

α AQUILÆ.

Date	h. m. s.
Jan. 2	19 . 43 . 7,31
10	7,43
Feb. 9	7,38
12	7,32
16	7,41
Apr. 20	7,62
June 20	7,40
July 14	7,40
21	7,45
24	7,47
Aug. 1	7,44
2	7,50
7	7,50
10	7,45
11	7,50
14	7,45
16	7,42
18	7,47
22	7,49
25	7,43
31	7,37
Sept. 2	7,51
4	7,49
6	7,43
7	7,39
11	7,35
12	7,48
16	7,57
18	7,46
22	7,48
23	7,41
26	7,49
27	7,46
Oct. 1	7,50
2	7,40
4	7,42
13	7,41
16	7,29
18	7,43
19	7,51
Nov. 3	7,42
20	7,38
Dec. 2	7,37
4	7,39
6	7,37
8	7,47

∗ N.P.D. 67°.49′.

Date	h. m. s.
Aug. 1	19 . 47 . 28,77
12	28,75
14	28,80

β AQUILÆ.

Date	h. m. s.
Jan. 2	19 . 47 . 36,10
Mar. 1	36,08
Apr. 20	36,11
June 20	36,10

β AQUILÆ *continued.*

Date	h. m. s.
July 14	19 . 47 . 36,11
21	36,17
Aug. 22	36,10
25	36,06
31	36,11
Sept. 2	36,15
4	36,12
5	36,16
6	36,16
7	36,13
8	36,13
11	36,11
12	36,15
16	36,17
18	36,11
22	36,10
23	36,10
26	36,13
27	36,07
Oct. 1	36,08
2	36,20
4	36,12
9	36,16
13	36,09
16	36,11
18	36,19
19	36,13
28	36,14
Nov. 3	36,05
20	36,14
29	36,05
Dec. 2	36,05
4	36,05
6	36,09
8	36,03

∗ N.P.D. 67°.59′.

Date	h. m. s.
July 24	19 . 47 . 57,75
Aug. 16	57,58
18	57,69

Σ 2600.

Date	h. m. s.
Aug. 2	19 . 48 . 28,09
10	28,10
11	28,06

Σ 2611.

Date	h. m. s.
Aug. 18	19 . 54 . 7,01
22	6,86
31	6,84
Sept. 5	6,79

Σ 2624.

Date	h. m. s.
July 21	19 . 57 . 37,94
24	37,99
Aug. 1	37,86

Σ 2651.

	h. m. s.
Aug. 18	20 . 6 . 32,91
22	33,09
31	32,81
Sept. 5	32,94

α^2 Capricorni.

July 21	20 . 9 . 20,31
24	20,32
Aug. 1	20,33
2	20,41
5	20,28
10	20,33
11	20,38
12	20,36
14	20,36
16	20,34
17	20,37
18	20,40
19	20,45
22	20,30
Sept. 4	20,46
5	20,46
6	20,34
8	20,41
9	20,47
11	20,37
12	20,35
23	20,36
27	20,35
Oct. 2	20,36
13	20,37
16	20,41
18	20,44
28	20,27
Nov. 3	20,33
16	20,41
Dec. 4	20,44
6	20,49

Σ 2665.

July 21	20 . 12 . 2,53
Aug. 16	2,34

β^2 Capricorni.

Oct. 2	20 . 12 . 11,22

υ Capricorni.

Sept. 4	20 . 31 . 6,52
5	6,47

Σ 2708.

Aug. 16	20 . 32 . 44,19

Σ 2750.

	h. m. s.
Aug. 16	20 . 57 . 31,70

Σ 2757.

July 24	20 . 59 . 40,97
Aug. 1	40,78

ν Aquarii.

Sept. 5	21 . 1 . 2,22
6	2,17
Oct. 2	2,20
Nov. 27	2,23

* N.P.D. 100°. 50′.

Oct. 18	21 . 2 . 15,14
28	15,19
Nov. 16	15,10
20	15,04

* N.P.D. 99°. 59′.

Oct. 13	21 . 2 . 18,80
16	18,79

Σ 2781.

Sept. 11	21 . 8 . 21,04
13	21,35
16	21,11
20	21,12
23	21,14
27	21,09

* N.P.D. 97°. 48′.

Sept. 12	21 . 10 . 38,90
13	39,17
16	38,91
20	38,91
23	38,98
27	38,95

β Aquarii.

Jan. 5	21 . 23 . 17,45
July 21	17,47
24	17,46
Aug. 1	17,44
2	17,53
7	17,47
10	17,50

β Aquarii *continued.*

	h. m. s.
Aug. 11	21 . 23 . 17,51
12	17,50
14	17,54
21	17,47
24	17,48
26	17,52
Sept. 1	17,40
5	17,53
6	17,46
7	17,54
11	17,48
12	17,38
13	17,61
15	17,42
16	17,45
20	17,51
22	17,40
23	17,44
26	17,35
27	17,44
Oct. 1	17,39
2	17,39
4	17,48
5	17,40
9	17,37
12	17,44
13	17,43
16	17,53
28	17,48
Nov. 4	17,45
7	17,45
9	17,39
11	17,40
16	17,40
18	17,37
20	17,46
27	17,43
29	17,36

δ Capricorni.

Aug. 10	21 . 38 . 22,05
11	22,10

* N.P.D. 71°. 28′.

Sept. 12	21 . 43 . 36,01
16	35,86

Σ 2834.

Aug. 24	21 . 44 . 12,31

30 Aquarii.

Sept. 7	21 . 55 . 0,91

α Aquarii.

Jan. 5	21 . 57 . 43,10

α Aquarii *continued.*

	h. m. s.
July 21	21 . 57 . 43,10
Aug. 10	43,16
11	43,18
24	43,18
Sept. 15	43,10
16	43,05
Oct. 2	43,11
5	43,18
9	43,10
12	43,09
Nov. 4	43,18
7	43,11
8	43,06
11	43,12
16	43,14
28	43,07

Σ 2878.

Sept. 12	22 . 6 . 39,69

θ Aquarii.

Aug. 10	22 . 8 . 32,75
11	32,78
Sept. 7	32,81
Nov. 28	32,65

ϵ Cephei.

Nov. 29	22 . 9 . 16,15

γ Aquarii.

Oct. 4	22 . 13 . 32,79
5	32,74

ζ Aquarii.

Aug. 10	22 . 20 . 44,87
11	44,81

η Aquarii.

Aug. 11	22 . 27 . 17,35
Sept. 7	17,44
12	17,32
Oct. 4	17,31
Nov. 28	17,17
29	17,23

λ Aquarii.	h. m. s.
Sept. 7	22 . 44 . 25,31

x^2 Piscium.	h. m. s.
Nov. 29	22 . 52 . 34,78

β Piscium.	h. m. s.
Aug. 11	22 . 55 . 53,37
Sept. 7	53,34

β Pegasi.	h. m. s.
Nov. 29	22 . 56 . 10,35
Dec. 6	10,31

α PEGASI.	h. m. s.
Jan. 5	22 . 56 . 56,73
Mar. 6	56,70
16	56,63
24	56,71
28	56,83
Apr. 10	56,75
Oct. 4	56,67

α PEGASI *continued.*	h. m. s.
Oct. 5	22 . 56 . 56,80
9	56,75
12	56,74
Nov. 3	56,63
4	56,63
7	56,71
8	56,69
16	56,71
18	56,63
27	56,62

γ Piscium.	h. m. s.
Jan. 5	23 . 9 . 1,58
Aug. 11	1,68

κ^1 Piscium.	h. m. s.
Oct. 5	23 . 18 . 53,17
Nov. 29	53,13

ι Piscium.	h. m. s.
Jan. 7	23 . 31 . 52,60
Nov. 3	52,65
29	52,68

ω Piscium.	h. m. s.
Jan. 7	23 . 51 . 15,19
Nov. 3	15,11

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS, JAN. 1, 1843; WITH THE ANNUAL VARIATIONS.

Name of Star.	Approximate N.P.D. Jan.1,1843.	Number of Observations.	Mean R.A. Jan. 1, 1843.	Annual Variation.	Name of Star.	Approximate N.P.D. Jan.1,1843.	Number of Observations.	Mean R.A. Jan. 1, 1843.	Annual Variation.
	° ′		h. m. s.	s.		° ′		h. m. s.	s.
α ANDROMEDÆ....	61 . 47	21	0. 0. 17,06	+ 3,071	n Tauri............	68. 4	2	5. 9. 50,92	+ 3,596
Σ 1. *sf*............	53 . 39	2	0. 0. 45,76	+ 3,074	β TAURI	61 . 32	19	5 . 16 . 22,32	+ 3,783
Σ 4. *np*............	82 . 25	2	0. 1 . 47,49	+ 3,072	γ Orionis..........	83 . 48	3	5 . 16 . 42,82	+ 3,213
34 Piscium. *np*.....	79 . 44	1	0. 1 . 58,30	+ 3,073	33 Orionis. *sp*......	86 . 50	1	5 . 23. 0,51	+ 3,143
38 Piscium. *nf*.....	82. 0	2	0. 9 . 19,54	+ 3,078	Σ 734. *nf*..........	91 . 50	2	5 . 25 . 11,36	+ 3,028
Σ 24. *nf*.	64 . 44	3	0 . 10 . 22,02	+ 3,099	α Leporis	107 . 56	1	5 . 25 . 48,44	+ 2,642
Σ 25.	74 . 53	1	0 . 10 . 36,29	+ 3,087	θ¹ Orionis (1st star).	95 . 30	1	5 . 27 . 33,19	+ 2,943
d Piscium..........	82 . 41	1	0 . 12 . 31,62	+ 3,080	125 Tauri..........	64 . 12	2	5 . 30. 0,57	+ 3,711
⁎ (Mag. 8, 9)......	78 . 20	2	0 . 38 . 44,47	+ 3,117	Σ 758. *np*..........	90 . 17	3	5 . 30. 7,64	+ 3,064
58 Piscium	78 . 53	3	0 . 38 . 50,47	+ 3,115	α ORIONIS	82 . 38	10	5 . 46 . 40,42	+ 3,243
δ Piscium	83 . 16	1	0 . 40 . 32,50	+ 3,098	β Aurigæ..........	45. 5	3	5 . 48. 0,90	+ 4,402
Σ 63. *nf*.	79 . 1	3	0 . 42. 0,72	+ 3,118	Σ 840. *nf*†.........	79 . 14	1	5 . 57 . 45,83	+ 3,325
Piazzi O. 208......	78 . 4	2	0 . 43 . 22,17	+ 3,124	Piazzi VI. 62......	68 . 48	1	6 . 11 . 51,17	+ 3,588
B.A.C. 258.........	76 . 54	5	0 . 47 . 55,44	+ 3,135	μ Geminorum	67 . 25	3	6 . 13 . 27,77	+ 3,626
ε Piscium	82 . 57	1	0 . 54 . 48,01	+ 3,110	51 (Hev.) Cephei ..	2 . 44	4	6 . 24 . 57,99	+30,836
μ Cassiopeiæ.......	35 . 51	3	0 . 57 . 52,62	+ 3,533	γ Geminorum	73 . 28	1	6 . 28 . 38,55	+ 3,464
POLARIS. *nf*.	1 . 32	54	1. 3. 1,44	+16,814	Σ 953. *sf*..........	80 . 52	1	6 . 32 . 34,28	+ 3,283
φ Piscium. *nf*......	66 . 15	3	1. 5 . 14,28	+ 3,236	ε Geminorum......	64 . 43	3	6 . 34 . 16,25	+ 3,695
42 Ceti. *sf*.........	91 . 20	3	1 . 11 . 46,88	+ 3,061	Sirius	106 . 30	4	6 . 38 . 13,96	+ 2,646
⁎ (Mag. 9, 10).....	33 . 37	1	1 . 23. 0,65	+ 3,783	ω¹ Geminorum.....	65 . 34	3	6 . 52 . 50,69	+ 3,662
η Piscium.........	75 . 28	5	1 . 23. 5,50	+ 3,193	ζ Geminorum	69 . 12	1	6 . 54 . 47,66	+ 3,564
101 Piscium	76 . 9	3	1 . 27 . 23,28	+ 3,193	δ Geminorum. *nf*...	67 . 44	3	7 . 10 . 44,56	+ 3,592
103 Piscium	74 . 10	4	1 . 30 . 48,24	+ 3,217	Σ 1083. *sp*.........	69 . 12	1	7 . 16 . 17,55	+ 3,550
105 Piscium	74 . 24	1	1 . 31 . 13,31	+ 3,215	CASTOR. *nf*.........	57 . 46	16	7 . 24 . 34,38	+ 3,857
Σ 162*.............	42 . 53	1	1 . 39 . 32,70	+ 3,677	PROCYON..........	84 . 23	26	7 . 31. 4,84	+ 3,145
4 Arietis...........	73 . 50	4	1 . 39 . 40,62	+ 3,234	POLLUX	61 . 36	27	7 . 35 . 42,02	+ 3,683
γ Arietis...........	71 . 29	3	1 . 44 . 55,67	+ 3,268	Σ 1177. *sf*.	62. 2	3	7 . 55 . 59,17	+ 3,691
β Arietis	69 . 58	2	1 . 45 . 58,71	+ 3,288	μ¹ Cancri	66 . 55	1	7 . 56 . 59,60	+ 3,568
ι Arietis	72 . 57	5	1 . 48 . 47,07	+ 3,258	11 Cancri. *nf*.......	62. 4	1	7 . 59 . 12,81	+ 3,686
Σ 194..............	65 . 56	2	1 . 50 . 30,67	+ 3,347	ζ Cancri ‡.........	71 . 53	1	8. 3 . 12,05	+ 3,446
α Piscium. *sf*......	88. 0	3	1 . 53 . 55,78	+ 3,093	φ² Cancri. *sp*.......	62 . 33	2	8 . 17 . 16,79	+ 3,644
γ Andromedæ. *sp*...	48 . 26	2	1 . 54 . 17,20	+ 3,637	θ Cancri	71 . 23	1	8 . 22 . 38,23	+ 3,436
α ARIETIS.........	67 . 17	21	1 . 58 . 20,21	+ 3,347	Σ 1244. *sp*.........	47 . 39	2	8 . 27. 8,32	+ 4,046
θ¹ Arietis..........	70 . 50	5	2. 9 . 24,18	+ 3,319	δ Cancri	71 . 16	1	8 . 35 . 45,28	+ 3,423
Σ 274. *nf*..........	89 . 36	1	2 . 23 . 26,18	+ 3,076	ε Hydræ. *nf*.......	83. 1	2	8 . 38 . 27,37	+ 3,197
ν Arietis	68 . 43	1	2 . 29 . 54,67	+ 3,387	o² Cancri	73 . 49	2	8 . 48 . 48,70	+ 3,358
μ Arietis...........	70 . 40	1	2 . 33 . 31,63	+ 3,362	α² Cancri	77 . 32	3	8 . 49 . 53,71	+ 3,288
γ Ceti. *sf*.........	87 . 26	4	2 . 35 . 10,38	+ 3,108	κ Cancri	78 . 42	2	8 . 59 . 14,27	+ 3,260
ε Arietis	69 . 18	1	2 . 50 . 14,97	+ 3,412	α HYDRÆ..........	97 . 59	13	9 . 19 . 52,29	+ 2,950
α CETI	86 . 32	10	2 . 54. 4,79	+ 3,126	⁎ (Mag. 9).	69 . 51	2	9 . 21 . 10,52	+ 3,384
ι Persei	41. 0	2	2 . 57 . 46,19	+ 4,147	ξ Leonis...........	78. 0	1	9 . 23 . 28,81	+ 3,250
δ Arietis	70 . 52	1	3. 2 . 39,82	+ 3,402	14 Leonis	79 . 24	3	9 . 32 . 45,97	+ 3,220
Σ 401. *f*...........	62 . 58	3	3 . 21 . 53,00	+ 3,597	ψ Leonis..........	75 . 16	2	9 . 35 . 10,57	+ 3,278
e Pleiadum........	66. 2	1	3 . 35 . 52,50	+ 3,551	π Leonis...........	81 . 12	2	9 . 51 . 54,75	+ 3,180
η Tauri............	66 . 23	5	3 . 38. 9,78	+ 3,547	REGULUS	77 . 16	22	10. 0. 0,35	+ 3,221
γ¹ Eridani.........	103 . 58	1	3 . 50 . 42,44	+ 2,790	Piazzi X. 67. *sp*....	80 . 26	1	10 . 17 . 18,83	+ 3,168
A¹ Tauri	68 . 21	3	3 . 55 . 25,40	+ 3,525	ρ Leonis...........	79 . 53	2	10 . 24 . 32,41	+ 3,167
Σ 520.............	67 . 35	1	4. 8 . 53,94	+ 3,558	34 Sextantis	85 . 36	1	10 . 34 . 30,81	+ 3,108
υ¹ Tauri............	67 . 33	2	4 . 16 . 55,34	+ 3,568	*d* Leonis...........	85 . 32	1	10 . 52 . 27,09	+ 3,101
Σ 559. *np*.........	72 . 19	2	4 . 24 . 27,97	+ 3,460	⁎ (Mag. 8).	80 . 17	2	10 . 54. 4,43	+ 3,135
Σ 559. *sf*.........	72 . 19	1	4 . 24 . 28,18		Σ 1507. *np*.........	82. 7	3	10 . 57 . 58,38	+ 3,120
ALDEBARAN	73 . 49	21	4 . 26 . 55,11	+ 3,427	p³ Leonis..........	87 . 12	4	10 . 58 . 53,65	+ 3,088
2 Camelopardali. *sf*.	36 . 51	1	4 . 27 . 32,82	+ 4,711	Σ 1521. *np*.........	61 . 34	1	11. 6 . 55,36	+ 3,237
τ Tauri............	67 . 21	4	4 . 32 . 49,77	+ 3,589	φ Leonis...........	92 . 48	1	11. 8 . 40,90	+ 3,056
ι Tauri............	68 . 38	3	4 . 53 . 42,98	+ 3,572	ξ Ursæ Majoris. *np*.	57 . 35	3	11. 9 . 47,58	+ 3,255
ρ Orionis. *sp*.......	87 . 20	2	5. 5. 5,17	+ 3,131	ν Ursæ Majoris. *np*.	56. 3	3	11. 9 . 59,03	+ 3,265
RIGEL. *nf*.........	98 . 23	21	5. 6 . 59,73	+ 2,879	ι Leonis. *sp*.	78 . 36	2	11 . 15 . 44,32	+ 3,122

* The close double-star observed as single. † The other is a double-star.

‡ The north preceding double-star observed as single.

CATALOGUE OF THE CONCLUDED MEAN RIGHT ASCENSIONS, &c. *continued.*

Name of Star.	Approximate N.P.D. Jan.1,1843.	Number of Observations.	Mean R.A. Jan. 1, 1843.	Annual Variation.	Name of Star.	Approximate N.P.D. Jan.1,1843.	Number of Observations.	Mean R.A. Jan. 1, 1843.	Annual Variation.
	° ′		h. m. s.	s.		° ′		h. m. s.	s.
83 Leonis. *np*......	86 . 8	3	11 . 18 . 48,53	+ 3,087	⁎ (Mag. 7).........	115 . 20	2	16 . 42 . 38,58	+ 3,668
τ Leonis..........	86 . 17	3	11 . 19 . 51,70	+ 3,086	56 Herculis........	64 . 1	2	16 . 48 . 36,84	+ 2,450
υ Leonis..........	89 . 57	3	11 . 28 . 54,60	+ 3,071	31 Ophiuchi........	115 . 25	1	16 . 55 . 4,43	+ 3,677
Σ 1565. *sf*..........	70 . 8	3	11 . 31 . 26,72	+ 3,131	Σ 2120. *sf*..........	61 . 41	3	16 . 58 . 32,36	+ 2,376
Σ 1566. *sf*..........	68 . 6	2	11 . 32 . 27,98	+ 3,135	⁎ (Mag. 8, 9)......	89 . 27	1	17 . 4 . 53,29	+ 3,058
β LEONIS..........	74 . 33	18	11 . 41 . 2,88	+ 3,066	α HERCULIS. *np*....	75 . 26	30	17 . 7 . 29,51	+ 2,732
β Virginis..........	87 . 21	1	11 . 42 . 31,03	+ 3,075	B.A.C. 5831........	113 . 54	2	17 . 8 . 32,01	+ 3,648
B.A.C. 4006........	94 . 28	4	11 . 43 . 0,85	+ 3,063	Σ 2147. *np*..........	60 . 55	1	17 . 11 . 26,36	+ 2,343
η Virginis..........	89 . 48	2	12 . 11 . 52,53	+ 3,070	⁎ (Mag. 7, 8)......	60 . 55	3	17 . 11 . 47,43	+ 2,343
Σ 1633. *sp*..........	62 . 4	2	12 . 12 . 46,26	+ 3,031	θ Ophiuchi........	114 . 50	3	17 . 12 . 22,43	+ 3,676
Σ 1634. *np*..........	66 . 13	1	12 . 12 . 47,12	+ 3,038	*y* Ophiuchi........	117 . 59	5	17 . 13 . 29,02	+ 3,766
q Virginis..........	98 . 35	1	12 . 25 . 40,78	+ 3,093	Piazzi XVII. 94. *sp*.	74 . 15	1	17 . 17 . 29,37	+ 2,700
Piazzi XII. 202....	69 . 58	2	12 . 44 . 8,84	+ 2,977	e^2 Ophiuchi........	113 . 50	1	17 . 21 . 50,55	+ 3,653
ψ Virginis..........	98 . 41	2	12 . 46 . 11,70	+ 3,111	Σ 2178. *np*..........	54 . 56	2	17 . 23 . 51,45	+ 2,144
Σ 1690. *np*..........	94 . 1	1	12 . 48 . 9,69	+ 3,090	α OPHIUCHI........	77 . 19	30	17 . 27 . 38,99	+ 2,773
ϵ Virginis..........	78 . 12	3	12 . 54 . 21,73	+ 3,005	D Ophiuchi........	111 . 36	1	17 . 34 . 1,58	+ 3,596
α Comæ Berenices..	71 . 38	2	13 . 2 . 20,96	+ 2,951	Σ 2213. *sf*..........	58 . 48	2	17 . 38 . 55,36	+ 2,264
⁎ (Mag. 8)........	97 . 13	2	13 . 7 . 19,28	+ 3,119	⁎ (Mag. 9)........	48 . 12	2	17 . 46 . 15,39	+ 1,877
Σ 1734..............	86 . 14	1	13 . 12 . 43,81	+ 3,043	⁎ (Mag. 9, 10).....	48 . 16	1	17 . 46 . 37,86	+ 1,880
Σ 1742..............	87 . 47	2	13 . 16 . 18,45	+ 3,054	4 Sagittarii........	113 . 48	1	17 . 50 . 12,50	+ 3,660
SPICA..............	100 . 20	15	13 . 16 . 55,79	+ 3,151	70 Ophiuchi. *np*....	87 . 28	2	17 . 57 . 31,27	+ 3,011
⁎ (Mag. 8)........	97 . 3	2	13 . 22 . 41,53	+ 3,129	Σ 2278* 1st star..	33 . 35	3	18 . 0 . 6,93	+ 2,183
⁎ (Mag. 7, 8). *np*..	97 . 49	2	13 . 26 . 4,56	+ 3,138	Σ 2278* 2d star..	33 . 35	1	18 . 0 . 8,51	+ 2,183
m Virginis..........	97 . 54	3	13 . 33 . 22,70	+ 3,144	Σ 2296. *sp*..........	93 . 24	3	18 . 7 . 27,65	+ 3,150
Piazzi XIII. 163...	61 . 8	1	13 . 33 . 24,31	+ 2,778	*g* Sagittarii........	117 . 6	4	18 . 8 . 13,57	+ 3,754
⁎ (Mag. 9)........	98 . 33	2	13 . 36 . 21,83	+ 3,152	λ Sagittarii........	115 . 30	1	18 . 18 . 17,13	+ 3,706
⁎ (Mag. 7)........	98 . 55	3	13 . 38 . 56,00	+ 3,158	⁎ (Mag. 8, 9)......	71 . 50	3	18 . 20 . 28,90	+ 2,633
x Virginis..........	107 . 21	1	13 . 41 . 21,11	+ 3,249	δ URSÆ MINORIS..	3 . 24	44	18 . 22 . 57,43	−19,249
Σ 1804. *sp*..........	68 . 3	1	14 . 0 . 55,88	+ 2,799	*e* Serpentis........	91 . 7	4	18 . 23 . 50,61	+ 3,096
κ Virginis..........	99 . 32	1	14 . 4 . 31,72	+ 3,187	⁎ (Mag. 8, 9)......	38 . 23	2	18 . 30 . 12,92	+ 2,021
Σ 1823. *np*..........	78 . 58	1	14 . 8 . 8,34	+ 2,932	ϕ Sagittarii........	117 . 9	1	18 . 35 . 50,96	+ 3,748
ARCTURUS........	70 . 0	42	14 . 8 . 30,16	+ 2,734	Σ 2369..............	87 . 32	3	18 . 36 . 2,97	+ 3,014
Σ 1847. *nf*..........	99 . 30	2	14 . 20 . 15,78	+ 3,199	Σ 2375. *np*..........	84 . 39	2	18 . 37 . 45,38	+ 2,947
Σ 1850. *nf*..........	61 . 0	1	14 . 21 . 38,53	+ 2,641	Σ 2400. *sf*..........	73 . 55	3	18 . 41 . 52,51	+ 2,681
Σ 1858. *sp*..........	53 . 43	3	14 . 27 . 9,21	+ 2,483	Σ 2402..............	79 . 30	3	18 . 42 . 20,42	+ 2,827
ϵ BOOTIS. *sf*........	62 . 16	25	14 . 38 . 7,86	+ 2,623	⁎ (Mag. 8)..........	79 . 34	3	18 . 42 . 36,23	+ 2,829
Σ 1879..............	79 . 41	2	14 . 38 . 36,37	+ 2,915	Σ 2409..............	76 . 40	1	18 . 44 . 30,17	+ 2,760
α^2 LIBRÆ..........	105 . 23	15	14 . 42 . 12,23	+ 3,310	Σ 2408. *np*..........	79 . 24	3	18 . 44 . 34,35	+ 3,316
Σ 1886. *nf*..........	79 . 38	2	14 . 43 . 26,93	+ 2,910	σ Sagittarii........	116 . 29	1	18 . 45 . 31,65	+ 3,724
20 Libræ..........	114 . 40	1	14 . 54 . 53,70	+ 3,495	Σ 2415. *sf*..........	69 . 35	1	18 . 47 . 47,20	+ 2,584
β Bootis..........	48 . 59	3	14 . 56 . 1,93	+ 2,263	Σ 2422..............	64 . 6	1	18 . 50 . 44,85	+ 2,437
ι^1 Libræ..........	109 . 12	1	15 . 3 . 17,00	+ 3,406	Σ 2437..............	71 . 3	3	18 . 55 . 1,22	+ 2,625
Σ 1921. *np*..........	50 . 44	1	15 . 5 . 59,31	+ 2,278	⁎ (Mag. 7)........	71 . 6	3	18 . 55 . 4,36	+ 2,626
Σ 1934. *sp*..........	45 . 38	1	15 . 11 . 52,49	+ 2,099	o Sagittarii........	111 . 58	2	18 . 55 . 16,38	+ 3,594
⁎ (Mag. 7, 8)......	84 . 12	2	15 . 18 . 59,13	+ 2,967	⁎ (Mag. 8)........	66 . 52	5	18 . 57 . 6,43	+ 2,517
Σ 1943. *np*..........	84 . 5	1	15 . 19 . 51,48	+ 2,964	Σ 2448..............	54 . 29	2	18 . 58 . 2,11	+ 2,147
Σ 1952. *nf*..........	79 . 48	2	15 . 24 . 21,68	+ 2,883	Σ 2445. *nf*..........	66 . 54	3	18 . 58 . 2,84	+ 2,518
α CORONÆ BOREALIS	62 . 45	23	15 . 28 . 2,58	+ 2,528	ζ Aquilæ..........	76 . 22	2	18 . 58 . 11,74	+ 2,757
χ Libræ..........	113 . 18	1	15 . 31 . 0,82	+ 3,529	⁎ (Mag. 8)........	54 . 27	3	18 . 58 . 30,11	+ 2,146
Σ 1963. *sf*..........	59 . 23	1	15 . 31 . 30,76	+ 2,440	Σ 2449. *sf*..........	83 . 5	3	18 . 58 . 45,46	+ 2,914
κ Libræ..........	109 . 10	1	15 . 32 . 54,68	+ 3,443	17 Lyræ. *sf*........	57 . 44	3	19 . 1 . 29,42	+ 2,257
α SERPENTIS........	83 . 5	15	15 . 36 . 32,38	+ 2,939	ψ Sagittarii........	115 . 31	5	19 . 5 . 54,63	+ 3,682
β Serpentis. *nf*.....	74 . 5	4	15 . 38 . 56,75	+ 2,759	Σ 2482. *sf*..........	71 . 7	3	19 . 6 . 8,77	+ 2,632
Σ 1985. *sf*..........	91 . 42	1	15 . 47 . 47,13	+ 3,104	Σ 2484. *nf*..........	71 . 12	1	19 . 7 . 21,39	+ 2,635
ζ Ursæ Minoris....	11 . 44	3	15 . 49 . 47,60	− 2,358	Σ 2489. *sf*..........	75 . 44	3	19 . 9 . 15,47	+ 2,746
δ Scorpii..........	112 . 10	3	15 . 51 . 3,69	+ 3,531	Σ 2490. *nf*..........	93 . 45	3	19 . 9 . 45,03	+ 3,154
β^1 Scorpii..........	109 . 22	2	15 . 56 . 19,07	+ 3,474	ρ^1 Sagittarii........	108 . 8	1	19 . 12 . 33,97	+ 3,487
Σ 2011. *sp*..........	60 . 35	1	16 . 1 . 18,90	+ 2,415	Piazzi XIX. 85....	94 . 1	1	19 . 14 . 18,18	+ 3,159
δ OPHIUCHI........	93 . 17	16	16 . 6 . 7,42	+ 3,138	⁎ (Mag. 8, 9)......	62 . 56	3	19 . 20 . 9,59	+ 2,429
σ Scorpii..........	115 . 13	2	16 . 11 . 39,40	+ 3,629	Σ 2525..............	63 . 0	5	19 . 20 . 10,77	+ 2,430
ANTARES..........	116 . 5	26	16 . 19 . 47,49	+ 3,663	e^1 Sagittarii........	106 . 39	1	19 . 31 . 43,52	+ 3,439
τ Scorpii..........	117 . 53	6	16 . 26 . 7,13	+ 3,719	e^2 Sagittarii........	106 . 29	1	19 . 33 . 32,34	+ 3,434
Σ 2087. *np*..........	66 . 2	1	16 . 35 . 59,36	+ 2,516	Σ 2576. *np*..........	56 . 45	1	19 . 39 . 35,61	+ 2,275

* There are three stars.

Catalogue of the Concluded Mean Right Ascensions, &c. *continued.*

Name of Star.	Approximate N.P.D. Jan. 1, 1843.	Number of Observations.	Mean R.A. Jan. 1, 1843.	Annual Variation.	Name of Star.	Approximate N.P.D Jan. 1, 1843.	Number of Observations.	Mean R.A. Jan. 1, 1843.	Annual Variation.
	° ′		h. m. s.	s.		° ′		h. m. s.	s.
57 Sagittarii	109 . 26	1	19 . 43 . 4,27	+ 3,495	β Aquarii	96 . 16	45	21 . 23 . 17,45	+ 3,163
α Aquilæ	81 . 33	46	19 . 43 . 7,44	+ 2,925	δ Capricornii	106 . 50	2	21 . 38 . 22,08	+ 3,305
⚹ (Mag. 8).........	67 . 49	3	19 . 47 . 28,77	+ 2,584	⚹ (Mag. 9).........	71 . 28	2	21 . 43 . 35,94	+ 2,819
β Aquilæ	83 . 59	39	19 . 47 . 36,11	+ 2,945	Σ 2834. *sf* †	71 . 26	1	21 . 44 . 17,31	+ 2,820
⚹ (Mag. 7, 8).....	67 . 59	3	19 . 47 . 57,67	+ 2,589	30 Aquarii	97 . 17	1	21 . 55 . 0,91	+ 3,157
Σ 2600. *sp*.........	67 . 54	3	19 . 48 . 28,08	+ 2,587	α Aquarii	91 . 5	17	21 . 57 . 43,12	+ 3,083
Σ 2611. *sp*.........	43 . 4	4	19 . 54 . 6,87	+ 1,814	Σ 2878. *np*.........	82 . 48	1	22 . 6 . 39,69	+ 2,990
Σ 2624*............	54 . 25	3	19 . 57 . 37,93	+ 2,237	θ Aquarii	98 . 34	4	22 . 8 . 32,75	+ 3,165
Σ 2651. *np*.........	74 . 19	4	20 . 6 . 32,94	+ 2,751	ε Cephei	33 . 44	1	22 . 9 . 16,15	+ 2,140
α^2 Capricorni	103 . 2	32	20 . 9 . 20,38	+ 3,332	γ Aquarii	92 . 10	2	22 . 13 . 32,76	+ 3,093
Σ 2665. *sp*.........	76 . 7	2	20 . 12 . 2,43	+ 2,793	ζ Aquarii. *sf*	90 . 49	2	22 . 20 . 44,84	+ 3,078
β^2 Capricorni......	105 . 16	1	20 . 12 . 11,22	+ 3,376	η Aquarii	90 . 55	6	22 . 27 . 17,30	+ 3,079
υ Capricorni	108 . 41	2	20 . 31 . 6,50	+ 3,428	λ Aquarii	98 . 25	1	22 . 44 . 25,31	+ 3,135
Σ 2708. *sf*.........	51 . 54	1	20 . 32 . 44,19	+ 2,246	x^2 Piscium	90 . 39	1	22 . 52 . 34,78	+ 3,075
Σ 2750. *sf*.........	77 . 54	1	20 . 57 . 31,70	+ 2,866	β Piscium	87 . 1	2	22 . 55 . 53,36	+ 3,051
Σ 2757. *sf*.........	38 . 13	2	20 . 59 . 40,88	+ 1,868	β Pegasi...........	62 . 46	2	22 . 56 . 10,33	+ 2,881
ν Aquarii..........	102 . 0	4	21 . 1 . 2,20	+ 3,271	α Pegasi	75 . 38	17	22 . 56 . 56,70	+ 2,977
⚹ (Mag. 8).........	100 . 50	4	21 . 2 . 15,12	+ 3,249	γ Piscium..........	87 . 34	2	23 . 9 . 1,63	+ 3,058
⚹ (Mag. 7, 8).....	99 . 59	2	21 . 2 . 18,80	+ 3,235	κ^1 Piscium	89 . 36	2	23 . 18 . 53,15	+ 3,069
Σ 2781. *np*.........	98 . 18	6	21 . 8 . 21,14	+ 3,203	ι Piscium	85 . 13	3	23 . 31 . 52,64	+ 3,057
⚹ (Mag. 8).........	97 . 48	6	21 . 10 . 38,97	+ 3,194	ω Piscium..........	84 . 0	2	23 . 51 . 15,15	+ 3,017

* The *np* of the close double-star. † The R.A. by the observation has been increased 5^s.

ZENITH DISTANCES

OBSERVED WITH THE MURAL CIRCLE,

AND

CALCULATION

OF

GEOCENTRIC NORTH POLAR DISTANCES.

1843.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Jan. 2	⊙ S.L. M.	322 . 10	3 . 19,6	16,7	16,4	17,7	14,2	21,0	12,060	− 39,83			322 . 12 . 37,79	C.
	⊙ N.L.	321 . 40	0 . 15,7	13,4	12,6	15,1	11,6	17,7					321 . 40 . 14,35	C.
	α Cygni R. M.	59 . 20	0 . 38,0	34,2	34,6	34,3	33,5	37,8	10,985	− 17,53	−1	− 0,15	59 . 20 . 17,72	C.
	α Cygni	254 . 15	3 . 48,6	45,7	46,4	44,3	45,2	47,6			+3	+ 1,34	254 . 18 . 47,67	C.
	ζ Cephei R. M.	72 . 0	1 . 60,5	58,0	59,2	57,8	55,7	59,6	8,264	+ 39,19	−1	− 0,23	72 . 2 . 37,44	C.
	ζ Cephei	241 . 35	1 . 30,0	25,4	26,6	25,5	24,8	29,9					241 . 36 . 27,05	C.
	ω^1 Geminorum	274 . 35	0 . 56,3	51,6	56,7	50,8	50,3	53,5					274 . 35 . 53,20	C.
	Procyon R. M.	20 . 10	4 . 29,1	27,8	28,6	25,6	24,5	30,5	8,435	+ 35,62	−1	− 0,01	20 . 15 . 3,33	C.
	Procyon	293 . 20	3 . 63,1	61,7	63,2	58,9	57,8	63,0			+2	+ 0,06	293 . 24 . 1,38	C.
	Ceres	270 . 45	3 . 67,4	62,5	66,5	60,6	58,9	66,1			+2½	+ 0,76	270 . 49 . 4,46	C.
Jan. 4	(a) Σ 694	274 . 10	3 . 24,9	22,8	24,0	20,8	19,7	24,6					274 . 13 . 22,82	C.
	(b) α Lyncis R.	76 . 5	4 . 60,5	58,6	59,8	57,5	57,6	62,1					76 . 9 . 59,38	C.
	α Lyncis	237 . 25	4 . 8,4	6,5	7,4	4,2	6,4	10,5			+1	+ 0,28	237 . 29 . 7,55	C.
	⁎ Æ. 6h. 19m. 50s.	278 . 5	2 . 19,2	16,8	17,6	15,1	16,3	19,9			+2	+ 0,23	278 . 7 . 17,73	C.
	⁎ Æ. 6h. 21m. 6s. M.	...	...	...	...	...	...	...	5,234	+ 1 . 42,79	+2	+ 0,23	278 . 9 . 0,52	C.
	Ceres	270 . 30	2 . 62,2	60,0	60,5	57,9	58,5	62,0			+2½	+ 0,77	270 . 33 . 0,97	C.
Jan. 5	☽ S.L. M.	303 . 35	2 . 36,2	33,0	34,1	33,1	33,4	37,7	9,000	+ 23,94			303 . 37 . 58,54	C.
	☽ S.L. M.	...	...	...	...	...	...	...	9,112	+ 21,80	+1	+ 3,53	59,93	C.
	☽ S.L. M.	...	...	...	...	...	...	...	9,244	+ 19,20	+2	+ 7,04	60,84	C.
	15 Geminorum	278 . 5	3 . 61,1	57,6	60,4	56,0	57,4	61,2					278 . 8 . 58,98	C.
	(c) 15 Lyncis R. M.	73 . 10	5 . 6,1	6,3	6,6	4,4	4,4	9,5	14,123	− 1 . 22,83			73 . 13 . 43,42	C.
	(d) 15 Lyncis M.	240 . 25	1 . 44,5	38,9	40,7	39,1	39,9	44,5	14,123	− 1 . 22,83	+2	+ 0,98	240 . 25 . 19,43	C.
Jan. 7	☽ S.L. M.	293 . 15	3 . 32,2	32,4	30,1	29,5	30,5	33,5	9,000	+ 24,13	+1	+ 3,45	293 . 18 . 58,96	C.
	☽ S.L. M.	...	...	...	...	...	...	...	9,158	+ 20,99	+2	+ 6,95	59,32	C.
	☽ S.L. M.	...	...	...	...	...	...	...	9,314	+ 17,91	+3	+ 10,46	59,75	C.
	(e) 51 Androm. R. M.	62 . 25	1 . 2,9	2,8	1,6	2,5	1,9	6,2	7,680	+ 51,36	−1	− 0,17	62 . 26 . 54,17	C.
	51 Andromedæ	251 . 10	2 . 9,6	5,8	7,7	5,0	6,7	9,8			+1	+ 0,17	251 . 12 . 7,62	C.
Jan. 8	α Lyræ R. M.	53 . 15	1 . 23,6	22,1	21,5	21,6	23,6	26,5	13,270	− 1 . 5,16	−1	− 0,12	53 . 15 . 17,89	C.
	α Lyræ	260 . 20	3 . 46,2	41,9	44,7	41,8	44,7	46,8			+1	+ 0,12	260 . 23 . 44,50	C.
Jan. 9	(f) ⊙ S.L. M.	321 . 25	0 . 49,4	47,4	47,0	47,5	48,5	50,9	12,873	− 56,78			321 . 24 . 51,67	C.
	⊙ N.L.	320 . 50	2 . 26,5	24,6	24,5	24,1	24,3	28,6					320 . 52 . 25,45	C.
Jan. 10	(g) ⊙ S.L. M.	321 . 15	4 . 27,1	26,0	26,1	25,6	25,0	29,8	19,040	− 3 . 5,33			321 . 16 . 21,30	G.
	⊙ N.L.	320 . 40	3 . 54,8	54,9	55,4	52,9	53,9	57,4					320 . 43 . 54,92	G.
	(h) Capella R. M.	60 . 25	1 . 32,1	31,2	30,1	29,5	30,8	34,3	9,421	+ 15,18			60 . 26 . 46,53	G.
	Capella	253 . 10	2 . 18,8	13,5	17,0	13,4	14,0	18,1					253 . 12 . 15,82	G.
	Ceres	269 . 40	4 . 61,9	58,0	61,5	57,9	59,5	61,9			+2	+ 0,55	269 . 45 . 0,70	G.
Jan. 11	Ceres	337 . 50	1 . 16,1	14,3	18,3	17,2	16,4	14,5			+2	+ 0,55	337 . 51 . 16,73	G.
Jan. 12	(i) ☽ S.L. M.	343 . 25	0 . 17,9	15,1	19,4	19,5	18,5	15,2	9,517	+ 13,18			343 . 25 . 30,80	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,559	+ 12,49	+1	+ 0,94	31,05	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,601	+ 11,75	+2	+ 2,01	31,38	G.
	Capella R. M.	128 . 40	0 . 26,1	24,3	25,1	27,9	24,9	24,4	8,742	+ 29,33			128 . 40 . 54,80	G.
	Capella	321 . 25	1 . 26,4	23,2	26,1	26,3	25,1	24,8					321 . 26 . 25,37	G.
Jan. 16	⊙ S.L. M.	28 . 30	2 . 25,3	26,0	26,0	28,1	25,0	26,9	17,144	− 2 . 25,80			28 . 30 . 0,50	G.
	⊙ N.L.	27 . 55	2 . 32,8	33,7	33,8	35,2	33,9	33,1					27 . 57 . 33,83	G.
	α Persei R. M.	132 . 5	3 . 32,5	34,0	35,0	36,8	35,0	34,1	9,044	+ 23,02			132 . 8 . 57,70	G.
	α Persei	317 . 55	3 . 22,6	20,0	22,9	22,8	22,1	20,8					317 . 58 . 21,98	G.
	σ Persei R. M.	130 . 15	3 . 36,1	36,8	37,3	38,7	35,9	36,7	11,849	− 35,43			130 . 18 . 1,60	G.
	σ Persei	319 . 45	4 . 19,0	15,4	19,6	17,8	16,9	16,5					319 . 49 . 17,68	G.
	η Tauri R. M.	106 . 25	3 . 26,6	24,9	26,4	27,9	25,8	25,9	10,317	− 3,50			106 . 28 . 22,87	G.
	η Tauri	343 . 35	3 . 54,8	52,1	57,0	55,4	55,6	54,1					343 . 38 . 54,97	G.
	λ Tauri R. M.	94 . 50	4 . 6,8	4,8	7,9	8,7	5,9	6,1	9,829	+ 6,67			94 . 54 . 13,50	G.
	λ Tauri	355 . 10	3 . 3,5	3,0	6,2	5,9	5,2	3,3			+2	+ 0,13	355 . 13 . 4,75	G.

Runs taken Jan. 7, 7h, and Jan. 16, 1½h. Coincidences at the five wires taken Jan. 16, 2h.

On Jan. 11 the Circle was taken from the wall and the axis was cleaned. The Telescope was moved on the Limb through 68°, and the Microscopes were adjusted. Soon after, the fixed horizontal wire was ascertained to be equatoreally adjusted.

(a) Not seen double. (b) Wind disturbed the mercury. The image of the star was diffused, but seemed to be well bisected by the fixed wire. (c) Too much wind: the star waving. (d) On the micrometer-wire, the clamp not acting far enough. (e) The reading of E has been diminished by 0″,2 the Run of that Microscope, the following division having been inadvertently bisected. (f) The eye-glass was not well adjusted. (g) Much clouded. (h) Too much wind. (i) Badly defined Limb.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	75 . 23 . 5,99	29,964	38,1	35,6	3 . 47,08	8,42		16 . 17,30	112 . 57 . 35,63		⊙.
	74 . 50 . 42,55				3 . 38,87	8,40			38,60		⊙.
32,70	7 . 29 . 14,08	29,968	37,9	35,2	7,92				45 . 16 . 30,28	+ 8,86	α Cygni R.
	15,87								32,07		α Cygni.
32,25	− 5 . 13 . 5,64	29,966	37,5	34,1	5,52				32 . 33 . 57,12	+ 17,66	ζ Cephei R.
	4,75								58,01		ζ Cephei.
	27 . 46 . 21,40		31,9	28,2					65 . 34 . 1,94	− 2,02	ω^1 Geminorum.
32,36	46 . 34 . 28,47	30,024	31,8		1 . 4,64				84 . 22 . 41,39	− 3,46	Procyon R.
	29,58								42,50		Procyon.
	23 . 59 . 32,66	30,040	31,5	27,8	27,30	2,09			61 . 47 . 6,15		Ceres.
	27 . 23 . 51,02	29,874	36,8	34,2	31,19				65 . 11 . 30,49	+ 4,53	Σ 694.
33,47	− 9 . 20 . 27,58				9,90				28 . 26 . 30,80	+ 4,24	α Lyncis R.
	24,25								34,13		α Lyncis.
	31 . 17 . 45,93				36,57				69 . 5 . 30,78	− 0,04	⁎ Æ. $6^h . 19^m . 50^s$.
	31 . 19 . 28,72				36,61				69 . 7 . 13,61	− 0,12	⁎ Æ. $6^h . 21^m . 6^s$.
	23 . 43 . 29,17	29,844	37,2	35,2	26,36	2,08			61 . 31 . 1,73		Ceres.
	56 . 48 . 26,74	29,812	37,9	36,0	1 . 31,23	45 . 18,32		14 . 48,68	93 . 36 . 59,25		☽.
	28,13								60,64		☽.
	29,04								61,55		☽.
	31 . 19 . 27,18	29,980	35,2	33,1	36,83				69 . 7 . 12,29	+ 0,10	15 Geminorum.
31,43	− 6 . 24 . 11,62			33,2	6,79				31 . 22 . 49,87	− 0,04	15 Lyncis R.
	12,37								49,12		15 Lyncis.
	46 . 29 . 27,16	29,652	39,8	38,2	1 . 2,33	39 . 6,70		14 . 46,06	83 . 23 . 45,01		☽.
	27,52								45,37		☽.
	27,95								45,80		☽.
30,88	4 . 22 . 37,63	29,618	40,3	38,1	4,53				42 . 9 . 50,44	+ 20,64	51 Androm. R.
	35,82								48,63		51 Andromedæ.
31,20	13 . 34 . 13,91	29,578	37,3	35,3	14,35				51 . 21 . 36,54	− 4,46	α Lyræ R.
	12,70								35,33		α Lyræ.
	74 . 35 . 19,87	29,568	37,7	35,8	3 . 32,22	8,39		16 . 17,20	112 . 9 . 34,78		⊙.
	74 . 2 . 53,65				3 . 24,88	8,37			35,64		⊙.
	74 . 26 . 49,50	28,796	39,3	38,0	3 . 23,82	8,38		16 . 17,10	112 . 0 . 56,12		⊙.
	73 . 54 . 23,12				3 . 16,80	8,36			56,94		⊙.
31,18	6 . 22 . 45,27	28,934	37,1	34,2	6,52				44 . 10 . 0,07	+ 8,99	Capella R.
	44,02								9 . 58,82		Capella.
	22 . 55 . 28,90	28,948	36,5	34,0	24,67	2,05			60 . 42 . 59,80		Ceres.
	22 . 47 . 37,59	28,660	34,6	31,0	24,43	2,04			60 . 35 . 8,26		Ceres.
	28 . 21 . 51,66	28,990	33,0	29,2	31,86	26 . 47,10		15 . 29,12	65 . 27 . 15,58		☽.
	51,91								15,83		☽.
	52,24								16,16		☽.
40,08	6 . 22 . 44,34			28,6	6,61				44 . 9 . 59,23	+ 9,23	Capella R.
	46,23								10 . 1,12		Capella.
	73 . 26 . 21,36	29,458	37,5	37,0	3 . 15,91	8,33		16 . 16,80	111 . 0 . 20,42		⊙.
	72 . 53 . 54,69				3 . 9,50	8,31			20,96		⊙.
39,84	2 . 54 . 41,44	29,776	37,0	34,4	3,05				40 . 41 . 52,77	+ 17,93	α Persei R.
	42,84								54,17		α Persei.
39,64	4 . 45 . 37,54				4,99				42 . 32 . 50,81	+ 17,21	σ Persei R.
	38,54								51,81		σ Persei.
38,92	28 . 35 . 16,27				32,67				66 . 22 . 57,22	+ 9,49	η Tauri R.
	15,83								56,78		η Tauri.
39,13	40 . 9 . 25,64			34,0	50,60				77 . 57 . 24,52	+ 5,46	λ Tauri R.
	25,61								24,49		λ Tauri.

Coincidence of Micrometer Wire with fixed Wire = $10^r,138$, $10^r,144$, $10^r,149$, $10^r,158$, $10^r,165$ at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = + 0″,2. From Jan. 11 = + 1″,0.
Adopted Zenith Point = 246° . 49′ . 31″,80. From Jan. 11 = 315° . 3′ . 39″,14.
Assumed Co-latitude = 37° . 47′ . 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Jan. 16	(a) ☽ S.L. M.	351 . 15	0 . 12,2	8,1	13,3	13,1	13,0	8,9	10,934	– 16,60	–2	+ 7,13	351 . 15 . 1,96	G.
	☽ S.L. M.	...	...	...	...	...	...	...	10,804	– 13,76	–1	+ 3,52	1,19	G.
	☽ S.L. M.	...	...	...	...	...	...	...	10,621	– 9,84			1,59	G.
	Ceres	337 . 10	2 . 48,0	45,0	49,6	47,9	49,0	46,0			+2	+ 0,55	337 . 12 . 48,23	G.
Jan. 17	Ceres	337 . 5	0 . 21,2	18,7	22,4	22,6	22,8	19,1			+2	+ 0,55	337 . 5 . 21,70	G.
	(b) ☽ S.L. M.	356 . 35	4 . 52,0	50,8	55,9	54,4	53,8	51,3	9,620	+ 10,80	–2	+ 8,22	356 . 40 . 12,22	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,373	+ 16,07	1	+ 4,08	13,35	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,173	+ 20,35			13,55	G.
Jan. 18	55 Camelop. R.M.	151 . 40	4 . 52,5	51,2	55,4	55,5	53,7	53,0	6,861	+ 1 . 8,54			151 . 46 . 2,26	G.
	55 Camelopardali.	298 . 20	1 . 18,5	14,9	18,0	19,1	16,6	14,4					298 . 21 . 16,97	G.
	β Cancri R. M.	92 . 30	1 . 20,9	18,8	18,7	23,1	19,1	18,7	9,676	+ 9,86			92 . 31 . 29,79	G.
	β Cancri	357 . 35	0 . 49,5	47,1	51,2	52,8	51,7	48,2					357 . 35 . 50,12	G.
	ο Ursæ Maj. R. M.	144 . 5	0 . 38,3	37,5	38,9	42,0	39,1	37,9	12,960	– 58,60			144 . 4 . 40,37	G.
	ο Ursæ Majoris	306 . 0	2 . 39,8	36,0	39,0	39,8	39,8	36,4					306 . 2 . 38,55	G.
	Ceres	336 . 55	2 . 63,0	59,4	63,3	62,2	63,1	60,0			+2	+ 0,54	336 . 58 . 2,47	G.
Jan. 24	Castor R. M.	115 . 0	3 . 29,1	28,0	30,0	32,4	29,4	29,0	6,788	+ 1 . 10,05			115 . 4 . 39,82	G.
	Castor	335 . 0	2 . 37,0	35,0	37,0	38,2	37,8	34,4					335 . 2 . 36,65	G.
	55 Camelop. R. M.	151 . 45	1 . 19,9	19,1	21,2	23,2	20,4	19,7	10,921	– 16,09			151 . 46 . 4,54	G.
	55 Camelopardali.	298 . 20	1 . 14,7	13,0	15,0	16,6	13,7	10,4					298 . 21 . 13,93	G.
	ρ Draco. SP. R. M.	195 . 20	4 . 11,7	9,2	11,4	13,7	11,6	10,1	12,169	– 42,11			195 . 23 . 29,31	G.
	ρ Draconis SP.	254 . 40	3 . 48,0	45,4	49,1	49,4	48,8	46,0					254 . 43 . 47,92	G.
	λ U. Min. SP. R.M.	173 . 55	4 . 24,2	20,7	25,2	25,1	24,8	23,4	9,604	+ 11,35			173 . 59 . 35,40	G.
	λ Ursæ Minoris SP.	276 . 5	2 . 43,0	40,4	42,8	43,9	42,7	40,9					276 . 7 . 42,37	G.
	Ceres	336 . 15	1 . 41,0	38,9	42,0	43,1	42,3	38,8			+2	+ 0,53	336 . 16 . 41,60	G.
Jan. 25	(c) ☉ N.L. M.	26 . 0	2 . 27,2	28,8	27,8	30,8	29,0	27,0	16,320	– 2 . 8,62			26 . 0 . 19,90	G.
	☉ S.L.	26 . 30	2 . 44,0	46,0	45,2	47,3	46,4	43,8					26 . 32 . 45,55	G.
Jan. 26	(d) ☉ S.L. M.	26 . 15	3 . 37,9	41,0	37,9	41,2	40,0	36,2	12,127	– 41,23			26 . 17 . 57,92	G.
	☉ N.L.	25 . 45	0 . 26,9	29,0	27,1	30,9	30,5	26,0					25 . 45 . 28,42	G.
	ε Aurigæ R. M.	126 . 25	0 . 28,3	27,1	27,2	31,8	30,1	27,8	8,230	+ 40,00			126 . 26 . 8,73	G.
	ε Aurigæ	323 . 40	1 . 8,4	6,1	8,6	9,5	8,3	4,1					323 . 41 . 7,53	G.
Jan. 28	ο Ursæ Maj. R. M.	144 . 5	1 . 19,7	20,2	20,7	24,0	20,1	20,4	14,882	– 1 . 38,66			144 . 4 . 42,24	G.
	ο Ursæ Majoris	306 . 0	2 . 38,4	34,0	36,8	38,8	35,9	34,9					306 . 2 . 36,55	G.
	Ceres	335 . 50	2 . 7,2	4,3	7,3	7,8	6,2	3,7			+2	+ 0,53	335 . 52 . 6,68	G.
	ε Hydræ R. M.	89 . 50	1 . 19,3	18,3	18,4	21,1	19,1	18,0	10,882	– 15,28			89 . 51 . 3,80	G.
	ε Hydræ	0 . 15	1 . 11,7	12,9	14,6	18,0	13,9	11,2					0 . 16 . 13,75	G.
	ι Ursæ Maj. R. M.	131 . 30	1 . 12,3	12,4	12,4	10,8	11,9	10,7	13,960	– 1 . 19,44			131 . 29 . 52,34	G.
	ι Ursæ Majoris	318 . 35	2 . 26,0	22,1	25,2	25,9	23,4	22,2					318 . 37 . 24,22	G.
Jan. 30	(e) ☉ S.L. M.	25 . 15	2 . 26,6	27,2	26,2	28,9	28,3	25,2	16,738	– 2 . 17,25			25 . 15 . 9,90	G.
	☉ N.L.	24 . 40	2 . 46,2	48,9	47,1	49,2	47,9	44,0					24 . 42 . 47,32	G.
	η Piscium	352 . 40	3 . 32,0	30,8	33,1	32,6	33,1	29,1					352 . 43 . 31,90	G.
	105 Piscium	351 . 35	4 . 11,8	9,8	14,2	13,4	12,9	9,4					351 . 39 . 12,05	G.
	(f) Σ 162	320 . 5	4 . 22,8	20,1	23,5	22,3	21,8	20,1					320 . 9 . 21,92	G.
	γ Arietis. s.	348 . 40	4 . 22,1	19,5	24,9	23,5	24,1	21,1					348 . 44 . 22,68	G.
	γ Arietis. n. M.	...	...	...	...	...	...	...	10,588	– 9,07			348 . 44 . 13,61	G.
	B.A.C. 586	6 . 10	1 . 3,8	4,0	5,1	6,4	5,4	2,0					6 . 11 . 4,48	G.
	(g) Σ 221. np.	347 . 35	4 . 36,7	34,8	38,7	37,1	37,7	35,6					347 . 39 . 36,92	G.
	θ^1 Arietis	348 . 5	0 . 22,9	20,2	23,0	24,2	23,8	20,5					348 . 5 . 22,45	G.
	ψ Arietis	350 . 15	0 . 17,1	14,8	18,8	19,7	18,1	13,4					350 . 15 . 17,00	G.
	ϖ Arietis	352 . 55	0 . 28,1	26,0	28,0	30,7	28,5	26,2					352 . 55 . 27,93	G.
	(h) ⁎ Æ. $2^h.31^m.27^s$.	351 . 10	2 . 42,7	39,0	43,1	43,2	42,8	39,0					351 . 12 . 41,72	G.
	β U. Min. SP. R. M.	188 . 0	2 . 10,5	10,2	11,7	14,5	10,4	8,8	10,248	– 1,98			188 . 2 . 9,10	G.
	β Ursæ Minoris SP.	262 . 5	0 . 8,6	7,0	7,4	10,1	7,8	3,3					262 . 5 . 7,37	G.
	α Persei R. M.	132 . 5	3 . 25,1	25,8	26,1	28,3	25,0	23,6	8,650	+ 31,32			132 . 8 . 57,09	G.
	α Persei	317 . 55	3 . 21,9	17,9	21,2	21,4	19,8	16,2					317 . 58 . 19,85	G.

Coincidences at the five wires taken Feb. 12, 23^h.

(a) Badly defined Limb. (b) Uneven and misty.
(c) Extremely cloudy and doubtful.
(d) Worth little, so cloudy.
(e) Very badly defined.
(f) Not seen triple. The close double star observed as single.
(g) The companion is very minute.
(h) This star is of the 8th magnitude. A fainter preceded about 7^s.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	° ′ "	Inch.	°	°	′ "	′ "	r	′ "	° ′ "	"	
	36 . 11 . 22,82	29,948	35,0	33,3					73 . 7 . 56,67		☽.
	22,05				44,20	35 . 2,32		16 . 16,31	55,90		☽.
	22,45								56,30		☽.
	22 . 9 . 9,09	29,948	35,0	33,3	24,61	2,00			59 . 56 . 39,98		Ceres.
	22 . 1 . 42,56	30,164	39,8	39,0	24,61	1,99			59 . 49 . 13,19		Ceres.
	41 . 36 . 33,08			39,2					78 . 28 . 34,87		☽.
	34,21				53,36	39 . 38,44		16 . 21,41	36,00		☽.
	34,41								36,20		☽.
39,62	– 16 . 42 . 23,12	30,414	39,0	35,9	18,32				21 . 4 . 26,84	– 4,85	55 Camelop. R.
	22,17								27,79		55 Camelop.
39,95	42 . 32 . 9,35				55,96				80 . 20 . 13,59	– 7,13	β Cancri R.
	10,98								15,22		β Cancri.
39,46	9 . 1 . 1,23				9,69				28 . 45 . 57,36	– 7,50	ο Ursæ Maj. R.
	0,59								58,00		ο Ursæ Majoris.
	21 . 54 . 23,33			35,2	24,58	1,98			59 . 41 . 54,21		Ceres.
37,57	19 . 58 . 59,32	29,828	43,0	41,0	21,54				57 . 46 . 29,14	– 3,47	Castor R.
	57,51								27,33		Castor.
39,24	– 16 . 42 . 25,40			40,1	17,81				21 . 4 . 25,07	– 3,37	55 Camelop. R.
	25,21								,26		55 Camelop.
38,61	– 60 . 19 . 50,17			43,0	1 . 43,82				– 22 . 34 . 25,71	+ 0,70	ρ Draco. SP. R.
	51,22								26,76		ρ Draconis SP.
38,89	– 38 . 55 . 56,26				47,92				– 1 . 9 . 35,90	+ 4,71	λ U. Min. SP. R.
	56,77								36,41		λ Ursæ Min. SP.
	21 . 13 . 2,46				23,04	1,93			59 . 0 . 31,85		Ceres.
	70 . 56 . 40,76	29,950	45,1	45,1	2 . 49,11	8,21		16 . 15,80	109 . 2 . 45,74		☉.
	71 . 29 . 6,41				2 . 54,33	8,24			44,98		☉.
	71 . 14 . 18,78	29,944	48,4	51,1	2 . 49,75	8,22		16 . 15,70	108 . 47 . 52,89		☉.
	70 . 41 . 49,28				2 . 44,72	8,20			49,78		☉.
38,13	8 . 37 . 30,41	29,994	47,0	45,0	8,96				46 . 24 . 47,65	+ 11,30	ε Aurigæ R.
	28,39								45,63		ε Aurigæ.
39,40	– 9 . 1 . 3,10	29,850	46,7	43,6	9,36				28 . 45 . 55,82	– 5,37	ο Ursæ Maj. R.
	2,59								56,33		ο Ursæ Majoris.
	20 . 48 . 27,54				22,41	1,89			58 . 35 . 56,34		Ceres.
38,78	45 . 12 . 35,34			43,0	59,41				83 . 0 . 43,03	– 9,16	ε Hydræ R.
	34,61								42,30		ε Hydræ.
38,28	3 . 33 . 46,80				3,68				41 . 20 . 58,76	– 9,54	ι Ursæ Maj. R.
	45,08								57,04		ι Ursæ Majoris.
	70 . 11 . 30,76	29,616	53,3	52,0	2 . 38,23	8,17		16 . 15,20	107 . 44 . 53,90		☉.
	69 . 39 . 8,18				2 . 33,75	8,14			57,27		☉.
	37 . 39 . 52,76	29,700	50,0	47,2	44,93				75 . 27 . 45,97	+ 8,46	η Piscium.
	36 . 35 . 32,91				43,22				74 . 23 . 24,41		105 Piscium.
	5 . 5 . 42,78				5,19				42 . 52 . 56,25	+ 19,17	Σ 162.
	33 . 40 . 43,54				38,79				71 . 28 . 30,61	+ 9,77	γ Arietis. *s.*
	33 . 40 . 34,47								71 . 28 . 21,54		γ Arietis. *n.*
	51 . 7 . 25,34				1 . 12,11				88 . 55 . 45,73	+ 3,71	B.A.C. 586.
	32 . 35 . 57,78	29,708	48,8	46,1	37,33				70 . 23 . 43,39	+ 10,04	Σ 221. *np.*
	33 . 1 . 43,31				37,94				70 . 49 . 29,53	+ 9,80	θ^1 Arietis.
	35 . 11 . 37,86				41,16				72 . 59 . 27,30	+ 8,85	ψ Arietis.
	37 . 51 . 48,79				45,36				75 . 39 . 42,43	+ 7,86	ω Arietis.
	36 . 9 . 2,58				42,63				73 . 56 . 53,49	+ 8,37	∗ Æ. $2^h.31^m.27^s$.
38,24	– 52 . 58 . 29,96	29,730	48,6	45,0	1 . 17,49				– 15 . 12 . 39,17	– 27,79	β U. Min. SP. R.
	31,77								40,98		β Ursæ Min. SP.
38,47	2 . 54 . 42,05				2,98				40 . 41 . 53,31	+ 18,32	α Persei R.
	40,71								51,97		α Persei.

Coincidence of Micrometer Wire with fixed Wire = 10^r,138, 10^r,144, 10^r,149, 10^r,158, 10^r,165 at the five wires. From Jan. 30 = 10^r,141, 10^r,148, 10^r,153, 10^r,161, 10^r,166.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 1″,0.

Adopted Zenith Point = 315°. 3′. 39″,14.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Jan. 30	ζ U. Min. SP. R. M.	184 . 30	3 . 23,9	23,6	24,8	27,3	23,1	22,5	9,511	+ 13,38			184 . 33 . 37,70	G.
	ζ Ursæ Minoris SP.	265 . 30	3 . 42,0	39,1	41,1	42,1	38,9	38,1					265 . 33 . 40,33	G.
	(a) Σ 520	344 . 50	0 . 50,1	46,1	50,0	51,9	49,7	45,3					344 . 50 . 48,88	G.
	Ceres	335 . 40	0 . 54,0	49,7	54,0	54,5	52,0	47,3			+2	+ 0,52	335 . 40 . 52,47	G.
	Vesta	347 . 5	0 . 5,8	2,2	7,0	7,3	5,5	1,9			+2	+ 0,43	347 . 5 . 5,38	G.
Jan. 31	δ Persei R. M.	130 . 5	2 . 29,0	29,0	30,1	32,4	28,5	26,0	8,870	+ 26,74			130 . 7 . 55,99	G.
	δ Persei	319 . 55	4 . 22,5	21,3	23,9	23,7	22,0	18,8					319 . 59 . 22,18	G.
	ζ U. Min. SP. R. M.	184 . 30	4 . 23,5	23,0	24,9	27,1	23,4	21,4	12,346	− 45,71			184 . 33 . 38,32	G.
	ζ Ursæ Minoris SP.	265 . 30	3 . 39,5	38,1	39,6	41,0	37,9	36,8					265 . 33 . 38,93	G.
	Σ 520	344 . 50	0 . 49,6	46,0	50,1	52,0	49,3	45,0					344 . 50 . 48,70	G.
	(b) Σ 559	349 . 30	4 . 56,4	55,0	59,0	59,8	59,0	51,9					349 . 34 . 56,85	G.
Feb. 1	☉ N.L. M.	24 . 10	1 . 28,5	28,0	29,4	30,0	28,3	25,1	15,998	− 2 . 1,83			24 . 9 . 26,44	G.
	☉ S.L.	24 . 40	1 . 52,6	52,5	52,3	54,0	51,5	48,1					24 . 41 . 51,90	G.
	(c) η Draco. SP. R. M.	200 . 55	3 . 25,8	24,8	26,4	28,4	24,9	24,9	15,129	− 1 . 43,73			200 . 56 . 42,25	G.
	(c) η Draconis SP.	249 . 10	0 . 33,2	31,4	32,3	34,9	31,8	29,8					249 . 10 . 32,25	G.
	k Tauri	342 . 25	2 . 47,7	42,6	48,0	47,1	44,9	42,2					342 . 27 . 45,50	G.
	Capella R. M.	128 . 40	0 . 33,0	30,7	31,2	35,2	31,0	29,3	8,972	+ 24,61			128 . 40 . 56,36	G.
	Capella	321 . 25	1 . 22,7	20,2	22,0	22,6	20,2	18,2					321 . 26 . 21,03	G.
Feb. 2	(c) Ceres	335 . 25	0 . 28,0	21,8	28,1	26,9	24,3	21,1			+2	+ 0,51	335 . 25 . 25,56	G.
	Vesta	346 . 40	0 . 22,3	17,1	22,1	22,0	19,0	16,9			+2	+ 0,44	346 . 40 . 20,36	G.
Feb. 3	(d) Ceres	335 . 20	0 . 44,1	40,0	44,3	44,6	39,7	39,1			+2	+ 0,51	335 . 20 . 42,49	G.
	(d) Vesta	346 . 30	2 . 13,3	7,8	13,8	10,9	6,7	6,7			+2	+ 0,44	346 . 32 . 10,37	G.
Feb. 10	☉ S.L. M.	21 . 55	3 . 38,0	40,0	39,1	40,4	39,6	38,0	12,835	− 55,91			21 . 57 . 43,81	G.
	☉ N.L.	21 . 25	0 . 22,4	23,8	23,5	25,9	22,4	20,4					21 . 25 . 23,12	G.
	Capella R. M.	128 . 40	0 . 28,1	28,0	28,6	31,9	27,7	27,0	8,838	+ 27,40			128 . 40 . 56,02	G.
	Capella	321 . 25	1 . 20,1	19,0	21,4	21,8	19,6	18,0					321 . 26 . 20,17	G.
	(e) ☽ S.L. M.	343 . 25	0 . 36,7	36,0	40,8	40,5	39,0	34,7	9,311	+ 17,55			343 . 25 . 55,58	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,270	+ 18,58	+1	− 0,78	55,83	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,252	+ 19,05	+2	− 1,43	55,65	G.
	(f) α Lyncis R. M.	144 . 20	3 . 30,1	31,8	32,8	35,4	31,9	30,8	8,243	+ 39,81			144 . 24 . 12,46	G.
	α Lyncis	305 . 40	3 . 5,5	3,8	8,0	7,4	6,1	2,8					305 . 43 . 6,05	G.
	β Canis Maj. R. M.	64 . 55	2 . 18,0	20,4	21,4	23,3	19,8	17,8	1,353	+ 3 . 3,43			65 . 0 . 23,88	G.
	β Canis Majoris	25 . 5	1 . 50,9	52,5	54,1	55,9	54,1	50,9					25 . 6 . 53,35	G.
	(g) Castor R. M.	115 . 5	1 . 17,1	18,3	19,7	22,7	17,0	18,0	14,802	− 1 . 36,91			115 . 4 . 42,07	G.
	(g) Castor	335 . 0	2 . 35,0	33,1	36,1	36,8	35,0	33,1					335 . 2 . 35,22	G.
Feb. 12	α Cygni R. M.	127 . 30	3 . 27,1	27,0	27,8	29,9	27,8	25,3	8,049	+ 43,85			127 . 34 . 11,83	G.
	α Cygni	322 . 30	3 . 4,8	2,7	6,3	5,5	4,1	1,9					322 . 33 . 4,67	G.
	α Cephei R. M.	144 . 45	1 . 16,9	16,9	18,1	19,7	17,8	15,5	11,039	− 18,48			144 . 45 . 59,19	G.
	α Cephei	305 . 20	1 . 20,6	18,1	22,7	22,1	20,0	16,9					305 . 21 . 20,27	G.
Feb. 13	(h) ☉ N.L. M.	20 . 25	1 . 30,5	30,8	31,1	33,0	31,3	28,9	11,151	− 20,81			20 . 26 . 10,34	G.
	(h) ☉ S.L.	20 . 55	3 . 26,3	27,0	27,8	29,3	27,5	25,3					20 . 58 . 27,70	G.
	(i) μ Ceti	357 . 45	3 . 38,5	38,4	41,2	41,3	40,7	38,0					357 . 48 . 40,22	G.
	(k) β U. Min. SP. R. M.	188 . 0	3 . 13,7	14,7	17,0	17,9	16,3	14,7	13,510	− 1 . 9,97			188 . 2 . 6,21	G.
	β Ursæ Minoris SP.	262 . 5	0 . 8,0	8,3	9,6	11,8	9,0	5,3					262 . 5 . 8,68	G.
	α Persei R. M.	132 . 5	3 . 31,9	33,1	35,1	35,4	33,5	31,4	9,078	+ 22,40			132 . 8 . 56,32	G.
	α Persei	317 . 55	3 . 20,0	18,0	22,4	20,9	20,0	18,0					317 . 58 . 20,37	G.
	d Pleiadum	343 . 45	3 . 32,1	30,8	34,5	33,0	32,9	30,2					343 . 48 . 32,77	G.
	ζ U. Min. SP. R. M.	184 . 30	3 . 50,1	51,2	53,6	54,6	51,4	51,1	10,929	− 16,18			184 . 33 . 36,39	G.
	ζ Ursæ Minoris SP.	265 . 30	3 . 40,2	39,0	41,5	41,7	40,2	39,0					265 . 33 . 40,80	G.
	Σ 520	344 . 50	0 . 48,0	47,0	50,9	51,8	50,8	46,4					344 . 50 . 49,27	G.
	Σ 840. nf	356 . 30	0 . 2,8	3,6	7,5	8,1	6,1	3,1					356 . 30 . 5,20	G.
	Piazzi. VI. 62	346 . 0	4 . 6,6	4,6	10,8	9,0	7,3	5,3					346 . 4 . 7,87	G.
	Σ 1200. s	317 . 0	2 . 6,5	3,7	8,4	7,1	6,8	3,3					317 . 2 . 6,27	G.
	Ceres	334 . 40	4 . 11,7	9,1	15,0	11,8	11,7	9,3			+2	+ 0,45	334 . 44 . 12,50	G.

Runs taken Feb. 12, 23ʰ.

(a) Not seen double: no star near this. (b) Both stars bisected. No correction for Runs. (c) Very cloudy. (d) Too much wind for reflection observations. (e) Misty. The limb appeared not quite full, but the correction for defect of illumination is not of sensible amount. (f) Very faint. (g) Snow falling. (h) Great waving. (i) This is B.A.C. 845. (k) Not good.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
39,02	− 49 . 29 . 58,56	29,746	47,7	44,3	1 . 8,59				− 11 . 43 . 58,87	− 25,31	ζ U. Min. SP. R.
	58,81								59,12		ζ Ursæ Min. SP.
	29 . 47 . 9,74				33,58				67 . 34 . 51,60	+ 7,53	Σ 520.
	20 . 37 . 13,33	29,836	45,8	42,2	22,24	1,87			58 . 24 . 41,98		Ceres.
	32 . 1 . 26,24	29,846	45,4	42,0	36,99	3,10			69 . 49 . 8,41		Vesta.
39,09	4 . 55 . 43,15	29,740	49,0	45,8	5,04				42 . 42 . 56,47	+ 17,06	δ Persei R.
	43,04								,36		δ Persei.
38,63	− 49 . 29 . 59,18	29,732	48,7	45,6	1 . 8,38				− 11 . 43 . 59,28	− 25,47	ζ U. Min. SP. R.
	30 . 0,21								44 . 0,31		ζ Ursæ Min. SP.
	29 . 47 . 9,56				33,47				67 . 34 . 51,31	+ 7,51	Σ 520.
	34 . 31 . 17,71				40,22				72 . 19 . 6,21	+ 5,28	Σ 559.
	69 . 5 . 47,30	29,836	50,0	48,0	2 . 31,72	8,11		16 . 14,90	107 . 11 . 34,09		⊙.
	69 . 38 . 12,76				2 . 36,05	8,13			34,06		⊙.
37,25	− 65 . 53 . 3,11	29,768	47,6	45,0	2 . 10,23				− 28 . 8 . 5,06	− 23,37	η Draco. SP. R.
	6,89								8,84		η Draconis SP.
	27 . 24 . 6,36				30,39				65 . 11 . 45,03	+ 6,34	k Tauri.
38,70	6 . 22 . 42,78	29,758	47,7	45,2	6,55				44 . 9 . 57,61	+ 11,19	Capella R.
	41,89								56,72		Capella.
	20 . 21 . 46,42	29,628	40,9	37,8	21,99	1,84			58 . 9 . 14,85		Ceres.
	31 . 36 . 41,22	29,600	41,3	39,0	36,32	3,09			69 . 24 . 22,73		Vesta.
	20 . 17 . 3,35	29,146	32,5	27,9	22,00	1,83			58 . 4 . 31,80		Ceres.
	31 . 28 . 31,23	29,150	30,0	25,0	36,65	3,08			69 . 16 . 13,08		Vesta.
	66 . 54 . 4,67	29,840	38,4	37,9	2 . 19,01	7,97		16 . 13,40	104 . 27 . 10,59		⊙.
	66 . 21 . 43,98				2 . 15,49	7,94			13,21		⊙.
38,10	6 . 22 . 43,12	29,800	37,2	34,6	6,71				44 . 9 . 58,11	+ 11,82	Capella R.
	41,03								56,02		Capella.
	28 . 22 . 16,44	29,822	37,0	34,2					65 . 27 . 0,69		☽
	16,69				32,44	27 . 12,77		15 . 43,70	0,94		☽.
	16,51								0,76		☽.
39,26	− 9 . 20 . 33,32				9,88				28 . 26 . 25,08	+ 11,38	a Lyncis R.
	33,09								25,31		a Lyncis.
38,62	70 . 3 . 15,26	29,826	36,9	33,4	2 . 44,45				107 . 53 . 7,99	− 9,19	β Canis Maj. R.
	14,21								6,94		β Canis Majoris.
38,65	19 . 58 . 57,07		35,9	32,8	21,92				57 . 46 . 27,27	− 2,35	Castor R.
	56,08								26,28		Castor.
38,25	7 . 29 . 27,31	29,964	37,4	32,4	7,97				45 . 16 . 43,56	− 2,99	α Cygni R.
	25,53								41,78		α Cygni.
39,73	− 9 . 42 . 20,05		38,1	33,0	10,35				28 . 4 . 37,88	+ 2,03	α Cephei R.
	18,87								39,06		α Cephei.
	65 . 22 . 31,20	29,958	38,2	33,1	2 . 11,27	7,87		16 . 12,90	103 . 27 . 55,78		⊙.
	65 . 54 . 48,56				2 . 14,56	7,90			50,60		⊙.
	42 . 45 . 1,08	29,848	38,0	32,0	55,79				80 . 33 . 5,15	+ 5,12	μ Ceti.
37,45	− 52 . 58 . 27,07				1 . 19,94				− 15 . 12 . 38,73	− 28,26	β U. Min. SP. R.
	30,46								42,12		β Ursæ Min. SP.
38,35	2 . 54 . 42,82				3,07				40 . 41 . 54,17	+ 17,95	α Persei R.
	41,23								52,58		α Persei.
	28 . 44 . 53,63		36,1	30,1	33,27				66 . 32 . 35,18	+ 8,65	d Pleiadum.
38,60	− 49 . 29 . 57,25				1 . 10,91				− 11 . 43 . 59,88	− 26,66	ζ U. Min. SP. R.
	58,34								44 . 0,97		ζ Ursæ Min. SP.
	29 . 47 . 10,13			29,7	34,74				67 . 34 . 53,15	+ 7,15	Σ 520.
	41 . 26 . 26,06	29,828	35,2	28,2	53,69				79 . 14 . 28,03	− 1,78	Σ 840. n.f.
	31 . 0 . 28,73				36,57				68 . 48 . 13,58	+ 0,37	Piazzi VI. 62.
	1 . 58 . 27,13	29,800	34,7	27,4	2,10				39 . 45 . 37,51	− 2,35	Σ 1200. s.
	19 . 40 . 33,36				21,78	1,73			57 . 28 . 1,69		Ceres.

Coincidence of Micrometer Wire with fixed Wire = 10r,141, 10r,148, 10r,153, 10r,161, 10r,166 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = + 1″,0. From Feb. 10 = + 4″,4.
Adopted Zenith Point = 315°. 3′. 39″,14.
Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Feb. 13	ϕ^2 Cancri. *sp.*	339 . 45	4 . 36,0	32,7	38,6	36,0	36,8	34,7					339 . 49 . 36,47	G.
	(*a*) ϵ Hydræ R. M.	89 . 45	4 . 34,9	35,0	38,0	37,3	37,1	35,2	5,968	+ 1 . 27,23			89 . 51 . 4,16	G.
	ϵ Hydræ	0 . 15	1 . 11,6	11,9	16,0	16,7	14,0	11,4					0 . 16 . 13,78	G.
	(*b*) ☽ N.L. M.	353 . 10	1 . 18,9	17,1	22,3	20,0	19,6	16,0	9,034	+ 23,21	−1	+ 3,86	353 . 11 . 46,24	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,870	+ 26,74			45,91	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,641	+ 31,68	+1	− 3,78	47,07	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,465	+ 35,45	+2	− 7,49	47,13	G.
Feb. 14	Ceres	334 . 40	1 . 42,9	38,0	43,9	42,1	39,7	40,2			+2	+ 0,44	334 . 41 . 41,82	G.
	o Ursæ Maj. R. M.	144 . 0	3 . 23,2	24,2	27,3	25,6	25,1	23,4	6,232	+ 1 . 21,73			144 . 4 . 47,03	G.
	o Ursæ Majoris	306 . 0	2 . 34,1	31,0	34,8	34,6	32,8	31,9					306 . 2 . 33,57	G.
	ι Ursæ Maj. R. M.	131 . 25	3 . 25,6	23,9	26,6	25,9	23,0	24,1	5,739	+ 1 . 32,01			131 . 29 . 57,36	G.
	ι Ursæ Majoris	318 . 35	2 . 22,9	19,9	24,8	22,4	20,3	19,1					318 . 37 . 21,90	G.
	σ^1 Cancri	334 . 20	4 . 36,3	33,8	40,0	36,8	37,4	34,9					334 . 24 . 37,22	G.
	σ^2 Ursæ Majoris	299 . 30	0 . 59,0	56,5	60,6	59,3	56,9	54,5					299 . 30 . 57,93	G.
	Σ 1312. *np.*	314 . 15	0 . 41,7	39,1	43,6	41,8	40,4	38,5					314 . 15 . 40,95	G.
	(*c*) Vesta	345 . 5	1 . 23,7	19,0	26,3	22,1	22,1	20,8			+2	+ 0,42	345 . 6 . 22,95	G.
	(*d*) ☽ S.L. M.	359 . 35	4 . 27,1	25,6	32,0	28,5	27,1	27,4	9,481	+ 13,76	−2	+ 8,69	359 . 39 . 51,05	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,250	+ 18,73	−1	+ 4,33	51,66	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,042	+ 23,15			51,75	G.
	☽ S.L. M.	...	...	...	...	...	...	...	8,857	+ 27,17	+1	− 4,27	51,50	G.
	μ Hydræ R. M.	66 . 45	4 . 26,2	25,1	28,6	26,9	26,2	24,8	6,030	+ 1 . 25,94			66 . 50 . 52,89	G.
	μ Hydræ	23 . 15	1 . 22,5	23,0	24,9	24,0	21,9	21,8					23 . 16 . 23,22	G.
Feb. 15	(*e*) Castor R. M.	115 . 5	1 . 18,2	17,1	20,2	20,6	15,2	16,4	14,753	− 1 . 35,89			115 . 4 . 42,24	G.
	Castor	335 . 0	2 . 34,9	33,7	37,7	36,0	35,1	31,8					335 . 2 . 35,23	G.
	o^2 Cancri	351 . 5	0 . 8,2	4,2	11,0	8,3	7,3	4,2					351 . 5 . 7,22	G.
	Σ 1312	314 . 15	0 . 42,0	39,2	43,5	41,1	38,7	38,1					314 . 15 . 40,53	G.
	(*f*) ☽ S.L. M.	6 . 5	4 . 26,9	25,9	30,3	28,2	25,4	26,1	9,760	+ 7,94	−2	+ 9,03	6 . 9 . 44,75	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,489	+ 13,74	−1	+ 4,51	46,03	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,263	+ 18,56			46,34	G.
Feb. 16	α Cygni R. M.	127 . 30	3 . 23,2	23,9	27,0	26,8	23,0	22,4	7,938	+ 46,17			127 . 34 . 11,05	G.
	α Cygni	322 . 30	3 . 6,0	4,1	9,6	7,2	6,8	3,0					322 . 33 . 6,57	G.
	α Cephei R. M.	144 . 45	1 . 23,2	25,1	25,9	26,8	24,9	22,9	11,460	− 27,24			144 . 45 . 57,76	G.
	α Cephei	305 . 20	1 . 21,9	19,7	25,0	21,9	21,4	16,9					305 . 21 . 21,33	G.
Feb. 17	☉ N.L. M.	19 . 5	0 . 15,5	17,7	19,3	18,9	18,7	14,1	13,312	− 1 . 5,84			19 . 4 . 11,58	G.
	☉ S.L.	19 . 35	1 . 29,0	29,9	31,8	32,1	31,8	28,0					19 . 36 . 30,65	G.
	(*g*) Σ 652	6 . 20	4 . 52,0	53,7	55,9	56,0	55,2	51,2					6 . 24 . 54,00	G.
	(*h*) ρ Orionis	4 . 35	0 . 13,9	14,4	16,5	17,3	15,9	12,8					4 . 35 . 15,17	G.
Feb. 21	λ Orionis. *sp.*	357 . 25	1 . 12,0	12,9	15,8	16,4	16,0	10,7					357 . 26 . 13,95	G.
Feb. 22	(*i*) δ U. Min. SP. R. M.	176 . 15	1 . 29,0	26,4	31,0	31,7	30,8	28,7	15,549	− 1 . 52,73		+ 0,09	176 . 14 . 36,94	G.
	δ Ursæ Min. SP.	273 . 50	2 . 39,9	39,0	43,4	41,2	42,0	37,3				− 0,22	273 . 52 . 40,21	G.
	α Cephei SP. R. M.	200 . 55	1 . 24,0	23,2	26,0	26,7	26,6	22,9	18,979	− 3 . 4,23			200 . 53 . 20,65	G.
	α Cephei SP.	249 . 10	3 . 54,9	54,5	57,4	55,8	55,9	52,6					249 . 13 . 55,13	G.
	Vesta	344 . 10	3 . 16,4	17,0	20,8	21,3	21,5	17,0			+2	+ 0,41	344 . 13 . 19,36	G.
	ϵ Leonis R. M.	107 . 20	2 . 44,0	47,1	48,4	49,9	47,5	46,2	16,123	− 2 . 4,69			107 . 20 . 42,46	G.
	ϵ Leonis	342 . 45	1 . 28,9	29,6	33,1	33,0	34,2	28,5					342 . 46 . 31,20	G.
	(*k*) Σ 1396.	355 . 50	1 . 22,5	25,5	27,9	28,8	28,3	23,3					355 . 51 . 26,03	G.
	π Leonis	358 . 25	3 . 4,5	7,3	10,0	10,8	9,8	6,0					358 . 28 . 8,03	G.
Feb. 23	λ Orionis. *sp.*	357 . 25	1 . 10,2	11,7	15,7	17,0	15,6	12,0					357 . 26 . 13,68	G.
	β Aurigæ R. M.	127 . 45	1 . 21,6	24,0	25,5	28,1	25,9	22,9	9,968	+ 3,60			127 . 46 . 28,25	G.
	β Aurigæ	322 . 20	0 . 43,1	42,1	46,5	48,6	46,3	42,9					322 . 20 . 44,90	G.
	α Lyncis R. M.	144 . 20	3 . 22,1	25,2	27,8	28,3	27,0	24,2	7,931	+ 46,07			144 . 24 . 11,79	G.
	α Lyncis	305 . 40	3 . 2,0	2,8	6,4	6,3	5,3	1,4					305 . 43 . 4,00	G.
	Piazzi VI. 62.	346 . 0	4 . 5,0	5,0	10,8	10,8	8,9	6,0					346 . 4 . 7,70	G.

Runs and Coincidence at the middle wire taken Feb. 23. 2^h.

(*a*) Clouds coming up caused a rise of temperature. (*b*) Dark clouds passing rapidly: very cloudy at the third wire. This was a good observing night, the objects being distinct and steady. (*c*) Very unsteady. (*d*) Bad definition, and great waving. The state of the atmosphere was peculiarly unfavourable for observing. (*e*) Ill-defined image. (*f*) Misty. (*g*) No correction for Runs. (*h*) Very cloudy. (*i*) Great deposition of moisture on the instrument from change of temperature: divisions barely visible. (*k*) Not seen double.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	° ′ "	Inch.	°	°	′ "	′ "	r	′ "	° ′ "	"	
	24 . 45 . 57,33				28,09				62 . 33 . 33,70	− 7,05	ϕ^2 Cancri. *sp.*
38,97	45 . 12 . 34,98	29,794	34,3	27,8	1 . 1,22				83 . 0 . 44,48	− 10,84	ε Hydræ R.
	34,64								44,14		ε Hydræ.
	38 . 8 . 7,10	29,788	34,1	29,1					75 . 35 . 28,13		☽.
	6,77				47,60	37 . 0,71		16 . 25,86	27,80		☽.
	7,93								28,96		☽.
	7,99								29,02		☽.
	19 . 38 . 2,68	29,536	30,8	22,9	21,74	1,72			57 . 25 . 30,98		Ceres.
40,30	− 9 . 1 . 7,89				9,68				28 . 45 . 50,71	− 1,60	ο Ursæ Maj. R.
	5,57								53,03		ο Ursæ Majoris.
39,63	3 . 33 . 41,78	29,514	28,7	21,1	3,81				41 . 20 . 53,87	− 6,77	ι Ursæ Maj. R.
	42,76								54,85		ι Ursæ Majoris.
	19 . 20 . 58,08				21,47				57 . 8 . 27,83	− 9,05	σ^4 Cancri.
	− 15 . 32 . 41,21				17,01				22 . 14 . 10,06	− 5,14	σ^2 Ursæ Majoris.
	− 0 . 47 . 58,19				0,85				36 . 59 . 9,24	− 7,30	Σ 1312. *np.*
	30 . 2 . 43,81	29,500	27,0	20,0	35,42	2,98			67 . 50 . 24,53		Vesta.
	44 . 36 . 11,91	29,496	26,8	19,8					81 . 25 . 20,35		☽.
	12,52				1 . 0,37	42 . 26,85		16 . 33,36	20,96		☽.
	12,61								21,05		☽.
	12,36								20,80		☽.
38,06	68 . 12 . 46,25	29,490	26,0	19,7	2 . 32,28				106 . 2 . 26,81	− 13,39	μ Hydræ R.
	44,08								24,64		μ Hydræ.
38,74	19 . 58 . 56,90	29,224	29,8	23,0	21,93				57 . 46 . 27,11	− 2,00	Castor R.
	56,09								26,30		Castor.
	36 . 1 . 28,08	29,214	26,6	21,0	44,00				73 . 49 . 20,36	− 10,54	o^2 Cancri.
	− 0 . 47 . 58,61				0,84				36 . 59 . 8,83	− 7,11	Σ 1312.
	51 . 6 . 5,61	29,200	26,3	21,1					87 . 50 . 40,73		☽.
	6,89				1 . 14,86	47 . 12,02		16 . 36,00	42,01		☽.
	7,20								42,32		☽.
38,81	7 . 29 . 28,09	29,444	30,0	29,0	7,89				45 . 16 . 44,26	− 4,03	α Cygni R.
	27,43								43,60		α Cygni.
39,55	− 9 . 42 . 18,62	29,460	30,8	30,0	10,24				28 . 4 . 39,42	+ 0,83	α Cephei R.
	17,81								40,23		α Cephei.
	64 . 0 . 32,44	29,456	32,0	32,1	2 . 1,69	7,77		16 . 12,00	102 . 5 . 46,64		⊙.
	64 . 32 . 51,51				2 . 4,62	7,81			44,60		⊙.
	51 . 21 . 14,86	29,478	32,3	30,0	1 . 14,81				89 . 9 . 37,95	− 2,53	Σ 652.
	49 . 31 . 36,03				1 . 10,12				87 . 19 . 54,43	− 1,99	ρ Orionis.
	42 . 22 . 35,95	29,350	39,6	39,5	53,31				80 . 10 . 37,54	− 0,77	λ Orionis. *sp.*
38,58	− 41 . 10 . 58,94	29,322	42,0	41,2	50,89				− 3 . 24 . 41,55	− 17,03	δ U. Min. SP. R.
	57,79								40,40		δ Ursæ Min. SP.
37,89	− 65 . 49 . 42,65				2 . 8,98				− 28 . 4 . 43,35	− 0,81	α Cephei SP. R.
	42,87								43,57		α Cephei SP.
	29 . 9 . 41,36			40,3	32,54	2,88			66 . 57 . 19,30		Vesta.
36,83	27 . 42 . 55,54				30,64				65 . 30 . 34,46	− 12,67	ε Leonis R.
	53,20								32,12		ε Leonis.
	40 . 47 . 48,03				50,30				78 . 35 . 46,61	− 14,26	Σ 1396.
	43 . 24 . 30,03				55,12				81 . 12 . 33,43	− 14,51	π Leonis.
	42 . 22 . 35,68	29,486	43,0	40,7	53,42				80 . 10 . 37,38	− 0,84	λ Orionis. *sp.*
36,58	7 . 17 . 9,75				7,49				45 . 4 . 25,52	+ 9,48	β Aurigæ R.
	6,90								22,67		β Aurigæ.
37,90	− 9 . 20 . 33,79			39,3	9,67				28 . 26 . 24,82	+ 13,03	α Lyncis R.
	34,00								24,61		α Lyncis.
	31 . 0 . 29,70				35,32				68 . 48 . 13,30	+ 0,42	Piazzi VI. 62.

Coincidence of Micrometer Wire with fixed Wire = 10r,141, 10r,148, 10r,153, 10r,161, 10r,166 at the five wires. From Feb. 21 = 10r,129, 10r,136, 10r,141, 10r,149, 10r,154.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 4″,4. From Feb. 21 = − 0″,4.

Adopted Zenith Point = 315° . 3′ . 39″,14. From Feb. 21 = 315° . 3′ . 38″,00.

Assumed Co-latitude = 37° . 47′ . 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Feb. 23	δ U. Min. SP. R. M.	176 . 10	3 . 49,8	51,1	55,9	56,0	54,1	51,8	8,117	+ 42,36		+ 0,94	176 . 14 . 36,37	G.
	δ Ursæ Minoris SP.	273 . 50	2 . 38,6	39,9	43,3	42,9	42,0	38,8				– 0,69	273 . 52 . 40,19	G.
Feb. 28	α Cygni R. M.	127 . 30	3 . 17,8	20,0	22,0	22,1	19,8	18,1	7,930	+ 46,09			127 . 34 . 6,46	G.
	α Cygni	322 . 30	3 . 7,2	7,4	11,6	9,8	9,0	5,7					322 . 33 . 8,83	G.
	α Cephei R. M. ...	144 . 45	1 . 29,4	31,2	34,0	34,8	32,8	29,5	11,973	– 38,19			144 . 45 . 53,94	G.
	α Cephei	305 . 20	1 . 24,0	22,1	27,0	26,4	24,0	21,0					305 . 21 . 24,25	G.
Mar. 1	ε Geminorum	341 . 55	4 . 7,0	5,8	12,6	9,8	9,0	6,7					341 . 59 . 8,98	G.
	Piazzi VI. 301. *np.*	314 . 15	2 . 13,3	15,0	18,5	16,8	15,2	13,3			+2	+ 0,80	314 . 17 . 16,43	G.
	Castor R. M.	115 . 5	1 . 36,5	39,3	42,2	42,8	39,7	38,0	15,761	– 1 . 57,02			115 . 4 . 42,93	G.
	Castor	335 . 0	2 . 31,2	30,9	35,2	34,6	34,0	31,1					335 . 2 . 33,15	G.
	Vesta	343 . 35	1 . 17,8	18,0	22,1	21,5	20,6	17,0			+2	+ 0,38	343 . 36 . 20,05	G.
	α Cygni R. M.	127 . 30	3 . 11,5	14,4	16,6	17,8	13,2	12,5	7,661	+ 51,83			127 . 34 . 6,56	G.
	α Cygni.	322 . 30	3 . 7,1	7,2	12,0	10,8	9,0	5,6					322 . 33 . 9,00	G.
Mar. 2	Castor R. M	115 . 0	4 . 31,8	35,0	37,5	37,7	35,5	34,4	9,822	+ 6,77			115 . 4 . 42,65	G.
	Castor	335 . 0	2 . 30,7	31,0	34,9	34,8	33,7	30,4					335 . 2 . 32,90	G.
	Vesta	343 . 30	1 . 49,2	48,0	54,8	52,2	51,8	47,2			+2	+ 0,38	343 . 31 . 51,13	G.
Mar. 3	☉ N.L. M.	13 . 55	0 . 21,1	23,9	26,0	26,2	26,0	22,0	9,462	+ 14,28			13 . 55 . 38,53	G.
	☉ S.L.	14 . 25	2 . 50,2	54,2	56,4	57,1	54,7	50,9					14 . 27 . 54,27	G.
	(*a*) Σ 559	349 . 30	4 . 54,0	54,9	58,3	57,7	57,0	52,6					349 . 34 . 55,75	G.
	k Tauri	342 . 25	2 . 43,3	43,2	46,8	44,8	44,2	42,0					342 . 27 . 44,38	G.
	β Eridani R. M. ..	77 . 30	0 . 36,8	38,0	40,2	39,7	38,0	37,0	7,320	+ 58,94			77 . 34 . 37,67	G.
	β Eridani.	12 . 30	2 . 37,1	39,0	41,1	40,9	40,0	37,9					12 . 32 . 39,65	G.
	ρ Orionis	4 . 35	0 . 10,3	12,2	14,7	15,3	13,3	10,1					4 . 35 . 12,68	G.
	γ Orionis	1 . 0	3 . 19,3	20,3	24,5	23,1	22,9	19,9					1 . 3 . 22,08	G.
	(*b*) Σ 734.	9 . 5	0 . 14,0	16,2	18,0	17,0	16,4	13,1					9 . 5 . 15,82	G.
	(*c*) Σ 758. *np.*	7 . 30	2 . 4,0	6,0	8,3	8,7	5,9	4,2			+2	– 0,00	7 . 32 . 6,43	G.
	β Aurigæ R. M. ...	127 . 45	1 . 23,7	26,1	27,1	27,9	26,7	23,8	9,939	+ 4,34			127 . 46 . 30,39	G.
	β Aurigæ.	322 . 20	0 . 44,5	43,8	48,0	47,7	45,7	43,0					322 . 20 . 45,53	G.
	Vesta	343 . 25	2 . 32,7	32,9	38,0	36,4	35,2	31,4			+2	+ 0,37	343 . 27 . 35,12	G.
	ε Leonis R. M. ...	107 . 20	1 . 18,6	20,2	23,0	22,4	20,1	19,2	11,813	– 34,73			107 . 20 . 46,02	G.
	ε Leonis	342 . 45	1 . 28,3	28,9	33,7	31,6	31,3	28,0					342 . 46 . 30,48	G.
	υ Ursæ Maj. R. M.	142 . 35	1 . 30,1	33,3	34,7	34,9	33,8	31,6	9,028	+ 23,55	+2	– 1,03	142 . 36 . 55,77	G.
	υ Ursæ Majoris	307 . 30	0 . 18,4	18,9	22,0	20,9	19,1	15,5			+3	+ 2,32	307 . 30 . 21,49	G.
Mar. 4	β Eridani R. M ...	77 . 30	2 . 27,5	31,4	32,5	33,8	30,4	28,1	4,094	+ 2 . 6,16			77 . 34 . 37,08	G.
	β Eridani	12 . 30	2 . 36,0	40,8	41,5	41,7	40,8	37,7					12 . 32 . 40,07	G.
	ρ Orionis	4 . 35	0 . 10,0	14,0	15,4	16,5	14,1	10,2					4 . 35 . 13,38	G.
	γ Orionis	1 . 0	3 . 18,4	22,2	24,8	24,8	23,5	19,9					1 . 3 . 22,68	G.
	Σ 758. *np.*	7 . 30	2 . 3,1	7,0	8,8	9,8	7,0	4,1			+3	– 0,00	7 . 32 . 6,90	G.
	α Lyncis R. M. ...	144 . 20	3 . 16,9	22,1	21,8	22,8	20,8	18,6	7,613	+ 52,82			144 . 24 . 13,72	G.
	α Lyncis.	305 . 40	3 . 2,2	3,5	6,7	5,3	3,8	0,2					305 . 43 . 3,98	G.
	Vesta	343 . 20	3 . 28,0	28,6	35,4	31,5	31,2	28,0			+2	+ 0,37	343 . 23 . 31,25	G.
Mar. 6	α Cygni R. M.	127 . 30	3 . 18,3	19,3	20,8	21,9	20,1	18,0	7,950	+ 45,80			127 . 34 . 5,92	G.
	α Cygni.	322 . 30	3 . 9,1	8,8	12,2	11,8	11,4	7,4					322 . 33 . 10,50	G.
	α Cephei R. M. ...	144 . 45	1 . 18,8	20,0	21,9	22,1	21,8	18,1	11,536	– 28,95			144 . 45 . 51,67	G.
	α Cephei	305 . 20	1 . 25,0	24,8	28,1	27,8	26,0	22,6					305 . 21 . 25,88	G.
Mar. 7	(*d*) ☉ N.L. M.	12 . 20	2 . 29,2	32,4	33,2	33,8	33,9	30,3	8,227	+ 40,02			12 . 23 . 12,47	G.
	(*d*) ☉ S.L.	12 . 55	0 . 21,7	23,4	25,6	26,4	26,8	21,8					12 . 55 . 24,33	G.
	Polaris R. M.	171 . 15	3 . 13,4	14,1	18,3	17,3	16,0	14,7	8,787	+ 28,34			171 . 18 . 44,37	G.
	Polaris	278 . 45	3 . 33,0	33,2	36,0	34,8	34,8	31,2					278 . 48 . 34,27	G.
	(*e*) ☽ S.L. M	345 . 10	2 . 31,8	32,1	34,5	34,9	35,7	30,2	10,646	– 10,41			345 . 12 . 23,11	G.
	☽ S.L. M	...	...	...	...	...	...	...	10,736	– 12,15	+1	+ 1,65	23,02	G.
	☽ S.L. M	...	...	...	...	...	...	...	10,797	– 13,23	+2	+ 3,42	23,61	G.
	Castor R. M	115 . 5	1 . 28,5	31,1	32,5	34,9	32,1	30,1	15,325	– 1 . 47,93			115 . 4 . 43,79	G.
	Castor	335 . 0	2 . 31,0	29,9	34,2	33,8	32,5	30,1					335 . 2 . 32,23	G.

Runs and Coincidences at the five wires taken March 6, 22^h.

(*a*) Both stars bisected. No correction for Runs.
(*b*) The close double star, observed as single.
(*c*) Faint. The south following is rather the brighter star.
(*d*) Cloudy.
(*e*) Faint.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
38,29	– 41 . 10 . 58,37				51,38				– 3 . 24 . 41,47	– 17,18	δ U. Min. SP. R.
	57,81								40,91		δ Ursæ Min. SP.
37,65	7 . 29 . 31,54	29,638	36,4	35,1	7,84				45 . 16 . 47,62	– 6,91	α Cygni R.
	30,83								46,95		α Cygni.
39,10	– 9 . 42 . 15,94	29,648	37,0	36,0	10,18				28 . 4 . 42,16	– 2,69	α Cephei R.
	13,75								44,35		α Cephei.
	26 . 55 . 30,98	29,778	36,3	31,7	30,63				64 . 43 . 9,89	+ 0,47	ε Geminorum.
	– 0 . 46 . 21,57				0,81				37 . 0 . 45,91	+ 7,31	Piazzi VI. 301. *np.*
38,04	19 . 58 . 55,07		35,3	30,4	21,99				57 . 46 . 25,34	– 1,02	Castor R.
	55,15								25,42		Castor.
	28 . 32 . 42,05	29,808	34,2	30,0	32,95	2,78			66 . 20 . 20,50		Vesta.
37,78	7 . 29 . 31,44	29,900	34,9	33,9	7,93				45 . 16 . 47,65	– 7,14	α Cygni R.
	31,00								47,21		α Cygni.
37,78	19 . 58 . 55,35	29,974	35,3	31,8	22,07				57 . 46 . 25,70	– 0,95	Castor R.
	54,90								25,25		Castor.
	28 . 28 . 13,13		34,8	30,3	33,01	2,77			66 . 15 . 51,65		Vesta.
	58 . 52 . 0,53	30,034	35,6	34,7	1 . 39,76	7,37		16 . 8,70	96 . 56 . 49,90		☉.
	59 . 24 . 16,27				1 . 41,89	7,42			50,32		☉.
	34 . 31 . 17,75	30,070	37,0	33,1	41,74				72 . 19 . 7,77	+ 4,26	Σ 559.
	27 . 24 . 6,38	30,076	36,1	32,0	31,55				65 . 11 . 46,21	+ 5,87	*k* Tauri.
38,66	57 . 29 . 0,33				1 . 35,23				95 . 17 . 43,84	– 4,90	β Eridani R.
	1,65								45,16		β Eridani.
	49 . 31 . 34,68			32,0	1 . 11,23				87 . 19 . 54,19	– 2,54	ρ Orionis.
	45 . 59 . 44,08			31,6	1 . 3,01				83 . 47 . 55,37	– 1,85	γ Orionis.
	54 . 1 . 37,82				1 . 23,76				91 . 50 . 9,86	– 4,90	Σ 734.
	52 . 28 . 28,43				1 . 19,18				90 . 16 . 55,89	– 4,61	Σ 758. *np.*
37,96	7 . 17 . 7,61				7,79				45 . 4 . 23,68	+ 9,80	β Aurigæ R.
	7,53								23,60		β Aurigæ.
	28 . 23 . 57,12	30,128	35,0	30,8	33,05	2,75			66 . 11 . 35,70		Vesta.
38,25	27 . 42 . 51,98				32,11				65 . 30 . 32,37	– 12,12	ε Leonis R.
	52,48								32,87		ε Leonis.
38,63	– 7 . 33 . 17,77				8,11				30 . 13 . 42,40	– 6,69	υ Ursæ Maj. R.
	16,51								43,66		υ Ursæ Majoris.
38,58	57 . 29 . 0,92	30,324	37,2	33,4	1 . 35,73				95 . 17 . 44,93	– 4,93	β Eridani R.
	2,07								46,08		β Eridani.
	49 . 31 . 35,38				1 . 11,61				87 . 19 . 55,27	– 2,57	ρ Orionis.
	45 . 59 . 44,68				1 . 3,29				83 . 47 . 56,25	– 1,87	γ Orionis.
	52 . 28 . 28,90	30,328	37,0	32,8	1 . 19,64				90 . 16 . 56,82	– 4,65	Σ 758. *np.*
38,85	– 9 . 20 . 35,72				10,08				28 . 26 . 22,48	+ 13,78	α Lyncis R.
	34,02								24,18		α Lyncis.
	28 . 19 . 53,25	30,300	34,0	30,3	33,17	2,74			66 . 7 . 31,96		Vesta.
38,21	7 . 29 . 32,08	30,164	37,0	34,0	8,00				45 . 16 . 48,36	– 8,13	α Cygni R.
	32,50								48,78		α Cygni.
38,78	– 9 . 42 . 13,67				10,39				28 . 4 . 44,22	– 4,31	α Cephei R.
	12,12								45,77		α Cephei.
	57 . 19 . 34,47	30,166	39,4	36,7	1 . 34,00	7,25		16 . 7,70	95 . 24 . 17,20		☉.
	57 . 51 . 46,33				1 . 35,96	7,29			15,58		☉.
39,32	– 36 . 15 . 6,37	30,150	40,0	38,1	44,15				1 . 31 . 17,76	+ 20,12	Polaris R.
	3,73								20,40		Polaris.
	30 . 8 . 45,11	30,144	40,4	38,7					67 . 14 . 1,62		☽.
	45,02				34,93	27 . 26,59		15 . 0,11	1,53		☽.
	45,61								2,12		☽.
38,01	19 . 58 . 54,21	30,168	37,0	30,8	22,26				57 . 46 . 24,75	– 0,60	Castor R.
	54,23								24,77		Castor.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,129, 10ʳ,136, 10ʳ,141, 10ʳ,149, 10ʳ,154 at the five wires. From March 1 = 10ʳ,140, 10ʳ,143, 10ʳ,147, 10ʳ,153, 10ʳ,158.

One Micrometer Revolution = 20″,844.

Correction for Runs = – 0″,4. From Feb. 28 = + 3″,7.

Adopted Zenith Point = 315°. 3′. 38″,00.

Assumed Colatitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Mar. 7	Procyon R. M.	88 . 25	3 . 22,0	24,0	26,0	27,1	24,8	23,9	8,238	+ 39,79			88 . 29 . 4,84	G.
	Procyon	1 . 35	3 . 8,1	10,9	14,2	14,0	13,5	9,4					1 . 38 . 12,08	G.
	Vesta	343 . 10	2 . 35,8	33,5	39,4	37,5	37,7	34,8			+2	+ 0,35	343 . 12 . 37,12	G.
Mar. 8	☽ S.L. M.	343 . 35	1 . 50,0	50,2	55,0	54,0	54,8	48,3	11,520	− 28,70	−1	− 0,64	343 . 36 . 22,94	G.
	☽ S.L. M.	...	...	...	...	...	...	...	11,576	− 29,79			22,49	G.
	☽ S.L. M.	...	...	...	...	...	...	...	11,621	− 30,60	1	+ 0,78	22,46	G.
	☽ S.L. M.	...	...	...	...	...	...	...	11,700	− 32,13	+2	+ 1,69	21,84	G.
	β Eridani R. M.	77 . 30	3 . 14,0	16,0	18,3	18,9	17,7	14,7	6,318	+ 1 . 19,82			77 . 34 . 36,82	G.
	β Eridani	12 . 30	2 . 36,2	37,9	41,4	41,0	41,6	37,4					12 . 32 . 39,57	G.
	Capella R. M.	128 . 40	2 . 27,4	28,1	30,0	31,8	30,1	27,9	14,618	− 1 . 33,20			128 . 40 . 56,32	G.
	Capella	321 . 25	1 . 17,3	16,8	20,6	20,1	20,0	16,2					321 . 26 . 18,67	G.
	ι Orionis	13 . 15	0 . 59,0	60,1	64,0	63,9	63,5	59,2					13 . 16 . 1,73	G.
	125 Tauri	341 . 25	2 . 43,2	41,8	48,0	45,4	45,2	42,5					341 . 27 . 44,68	G.
Mar. 17	☉ N.L. M.	8 . 25	2 . 39,7	43,3	44,1	45,9	45,3	38,7	9,230	+ 19,12			8 . 28 . 1,99	G.
	☉ S.L.	9 . 0	0 . 5,7	9,8	9,8	11,9	10,8	4,0					9 . 0 . 8,67	G.
	γ Cephei SP. R. M.	186 . 5	0 . 25,3	24,1	25,7	29,0	26,6	24,0	14,123	− 1 . 22,88			186 . 4 . 2,90	G.
	γ Cephei SP.	264 . 0	3 . 12,0	10,5	13,2	13,3	11,8	11,0					264 . 3 . 12,02	G.
	γ Ursæ Maj. R. M.	137 . 20	3 . 13,7	13,5	15,9	17,2	15,9	14,1	6,445	+ 1 . 17,16			137 . 24 . 32,26	G.
	γ Ursæ Majoris	312 . 40	2 . 43,3	40,0	44,2	44,2	43,8	40,0					312 . 42 . 42,62	G.
	(a) β Cassiop. SP. R. M.	204 . 30	3 . 11,1	9,2	12,1	14,7	11,8	10,0	16,558	− 2 . 13,63			204 . 30 . 57,90	G.
	β Cassiopeiæ SP.	245 . 35	1 . 14,6	12,2	14,8	16,3	14,4	12,9					245 . 36 . 14,22	G.
	δ Ursæ Maj. R. M.	140 . 45	1 . 17,4	15,9	18,7	21,4	18,1	15,8	14,681	− 1 . 34,51			140 . 44 . 43,39	G.
	δ Ursæ Majoris	309 . 20	2 . 34,8	29,9	35,6	35,2	34,0	30,9					309 . 22 . 33,43	G.
	☽ S.L. M.	21 . 45	4 . 40,4	38,8	42,0	42,1	42,4	39,5	9,458	+ 14,22	−2	+ 7,73	21 . 50 . 2,88	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,268	+ 18,24	−1	+ 3,90	3,07	G.
Mar. 18	(b) ☉ N.L. M.	8 . 5	0 . 59,8	58,6	62,3	66,3	64,5	58,4	14,836	− 1 . 37,85			8 . 4 . 23,82	C.
	(b) ☉ S.L.	8 . 35	1 . 27,9	29,2	29,7	35,0	32,3	26,7					8 . 36 . 30,15	C.
	γ Orionis	1 . 0	3 . 20,0	26,2	24,9	29,1	29,0	21,8			+2	+ 0,06	1 . 3 . 25,28	G.
	ι Orionis	13 . 15	1 . 4,1	10,2	7,4	11,5	11,9	3,8					13 . 16 . 8,17	G.
	β Aurigæ R. M.	127 . 45	1 . 6,6	4,8	6,3	11,4	5,0	5,4	9,080	+ 22,13			127 . 46 . 28,73	G.
	β Aurigæ	322 . 20	0 . 44,2	42,0	46,7	47,5	47,4	40,4					322 . 20 . 44,72	G.
	δ Leonis R. M.	104 . 10	3 . 16,1	12,9	16,9	18,8	15,2	13,2	7,829	+ 50,08			104 . 14 . 5,65	G.
	δ Leonis	345 . 50	3 . 10,4	5,8	11,8	12,8	10,8	7,5					345 . 53 . 9,90	G.
Mar. 20	☉ S.L. M.	7 . 45	3 . 27,8	28,0	30,0	30,8	30,3	25,4	8,227	+ 39,91			7 . 49 . 8,68	G.
	☉ N.L.	7 . 15	1 . 60,3	61,3	63,9	65,8	64,8	57,1					7 . 17 . 2,23	G.
	δ Geminorum R. M.	105 . 5	1 . 43,8	41,0	43,3	47,8	43,0	41,1	8,724	+ 29,56			105 . 7 . 12,91	G.
	(c) δ Geminorum	344 . 55	4 . 59,7	58,0	61,8	63,9	62,0	57,2					345 . 0 . 0,43	G.
Mar. 21	(d) ☉ N.L. M.	6 . 50	3 . 32,3	34,9	36,0	37,9	37,2	32,6	10,700	− 11,63			6 . 53 . 23,57	G.
	(d) ☉ S.L.	7 . 25	0 . 24,2	27,2	26,3	31,4	29,7	22,9					7 . 25 . 26,95	G.
	ε Leonis R. M.	107 . 20	0 . 26,8	26,5	28,0	31,9	27,8	25,9	9,367	+ 16,15			107 . 20 . 43,97	G.
	ε Leonis	342 . 45	1 . 28,5	25,7	32,1	32,8	30,9	27,3					342 . 46 . 29,57	G.
	ψ Ursæ Maj. R. M.	128 . 10	1 . 29,3	27,7	28,8	33,9	28,8	26,4	9,729	+ 8,61			128 . 11 . 37,78	G.
	ψ Ursæ Majoris	321 . 55	0 . 36,8	33,8	37,5	39,7	38,4	34,4					321 . 55 . 36,77	G.
	(e) δ Leonis R. M.	104 . 10	3 . 40,8	38,3	41,0	44,2	40,7	38,1	9,078	+ 22,17			104 . 14 . 2,74	G.
	(e) δ Leonis	345 . 50	3 . 11,6	8,8	14,4	15,7	13,4	9,5					345 . 53 . 12,28	G.
Mar. 22	☉ S.L. M.	7 . 0	2 . 26,9	28,4	29,9	32,3	31,8	25,3	12,060	− 39,98			7 . 1 . 49,15	G.
	☉ N.L.	6 . 25	4 . 40,9	44,1	45,0	45,5	45,1	39,7					6 . 29 . 43,45	G.
Mar. 23	☉ N.L. M.	6 . 5	2 . 22,3	22,8	24,5	25,0	25,0	19,2	13,951	− 1 . 19,40			6 . 6 . 3,77	G.
	☉ S.L.	6 . 35	3 . 7,9	8,4	10,5	11,1	10,9	5,8					6 . 38 . 9,15	G.
	Polaris R. M.	171 . 15	3 . 11,3	11,0	13,3	15,7	13,2	9,8	8,720	+ 29,64			171 . 18 . 42,07	G.
	Polaris	278 . 45	3 . 37,3	35,2	37,9	39,8	37,8	33,5					278 . 48 . 36,97	G.
	ε Geminorum	341 . 55	4 . 8,9	4,1	10,5	11,2	9,0	5,8			+2	+ 0,28	341 . 59 . 8,58	G.
	Piazzi VI. 301. *np.*	314 . 15	2 . 12,5	11,0	14,1	15,7	13,4	9,7			+1	+ 0,20	314 . 17 . 12,97	G.
	(f) δ Geminorum R.	105 . 5	2 . 13,0	10,8	13,5	17,8	12,8	10,2					105 . 7 . 13,05	G.
	δ Geminorum	344 . 55	4 . 61,1	60,1	63,8	64,2	63,3	59,0					345 . 0 . 1,98	G.

Runs taken March 23, 22h.
Coincidence at the middle wire taken March 23, 22h.

(a) Indistinct.
(b) Microscopes E and F for N.L. were supplied by replacing the circle, there not being time to read them before the observation.
(c) No correction for Runs.
(d) Misty.
(e) Very cloudy.
(f) Accidentally on the fixed wire.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
38,46	46 . 34 . 33,16				1 . 4,60				84 . 22 . 46,04	− 8,88	Procyon R.
	34,08								46,96		Procyon.
	28 . 8 . 59,12		34,0	28,2	32,93	2,69			65 . 56 . 37,64		Vesta.
	28 . 32 . 44,94	30,286	39,2	36,2					65 . 38 . 50,17		☽.
	44,49				33,04	26 . 25,11		15 . 10,98	49,72		☽.
	44,46								49,69		☽.
	43,84								49,07		☽.
38,20	57 . 29 . 1,18	30,280	38,4	33,8	1 . 35,51				95 . 17 . 44,97	− 5,02	β Eridani R.
	1,57								45,36		β Eridani.
37,50	6 . 22 . 41,68				6,82				44 . 9 . 56,78	+ 12,20	Capella R.
	40,67								55,77		Capella.
	58 . 12 . 23,73		38,0	32,0	1 . 38,58				96 . 1 . 10,59	− 6,47	ι Orionis.
	26 . 24 . 6,68				30,42				64 . 11 . 45,38	+ 4,27	125 Tauri.
	53 . 24 . 23,99	29,828	53,8	52,0	1 . 17,84	6,89		16 . 5,10	91 . 28 . 48,32		⊙.
	56 . 30,67				1 . 19,37	6,94			46,28		⊙.
37,46	− 51 . 0 . 24,90	29,810	47,7	42,0	1 . 12,86				− 13 . 14 . 29,48	+ 8,00	γ Cephei SP. R.
	25,98								30,56		γ Cephei SP.
37,44	− 2 . 20 . 54,26				2,42				35 . 26 . 11,60	− 15,50	γ Ursæ Maj. R.
	55,38								10,48		γ Ursæ Majoris.
36,06	− 69 . 27 . 19,90			40,8	2 . 36,77				− 31 . 42 . 48,39	+ 7,74	β Cassiop. SP. R.
	23,78								52,27		β Cassiopeiæ SP.
38,41	− 5 . 41 . 5,39				5,90				32 . 5 . 56,99	− 16,80	δ Ursæ Maj. R.
	4,57								57,81		δ Ursæ Majoris.
	66 . 46 . 24,88	29,790	45,0	39,0	2 . 17,59	55 . 50,18		16 . 36,57	103 . 23 . 24,00		☽.
	25,07								24,19		☽.
	53 . 0 . 45,82	29,818	48,8	49,6	1 . 17,10	6,85		16 . 4,80	91 . 5 . 9,15		⊙.
	53 . 32 . 52,15				1 . 18,61	6,90			7,34		⊙.
	45 . 59 . 47,28	29,824	51,2	53,7	59,68				83 . 47 . 55,24	− 2,13	γ Orionis.
	58 . 12 . 30,17			53,0	1 . 32,96				96 . 1 . 11,41	− 6,61	ι Orionis.
36,73	7 . 17 . 9,27				7,39				45 . 4 . 24,94	+ 9,92	β Aurigæ R.
	6,72								22,39		β Aurigæ.
37,78	30 . 49 . 32,35	29,854	47,6	42,0	35,30				68 . 37 . 15,93	− 16,45	δ Leonis R.
	31,90								15,48		δ Leonis.
	52 . 45 . 30,68	29,610	50,0	52,8	1 . 15,36	6,82		16 . 4,30	90 . 17 . 43,20		⊙.
	52 . 13 . 24,23				1 . 13,93	6,77			43,97		⊙.
36,67	29 . 56 . 25,09	29,500	50,9	47,8	33,27				67 . 44 . 6,64	− 2,38	δ Geminorum R.
	22,43								3,98		δ Geminorum.
	51 . 49 . 45,57	29,422	53,0	54,5	1 . 12,18	6,74		16 . 4,00	89 . 54 . 3,29		⊙.
	52 . 21 . 48,95				1 . 13,57	6,79			0,01		⊙.
36,77	27 . 42 . 54,03	29,400	51,4	47,1	30,29				65 . 30 . 32,60	− 10,77	ε Leonis R.
	51,57								30,14		ε Leonis.
37,28	6 . 52 . 0,22	29,382	51,2	48,1	6,93				44 . 39 . 15,43	− 12,39	ψ Ursæ Maj. R.
	51 . 58,77								13,98		ψ Ursæ Majoris.
37,51	30 . 49 . 35,26				34,31				68 . 37 . 17,85	− 16,21	δ Leonis R.
	34,28								16,87		δ Leonis.
	51 . 58 . 11,15	29,390	54,6	56,0	1 . 12,24	6,75		16 . 3,70	89 . 30 . 21,22		⊙.
	51 . 26 . 5,45				1 . 10,87	6,70			21,60		⊙.
	51 . 2 . 25,77	29,454	54,4	56,8	1 . 9,92	6,66		16 . 3,40	89 . 6 . 40,71		⊙.
	51 . 34 . 31,15				1 . 11,26	6,71			40,58		⊙.
39,52	− 36 . 15 . 4,07	29,462	55,4	55,8	41,61				1 . 31 . 22,60	+ 15,42	Polaris R.
	1,03								25,64		Polaris.
	26 . 55 . 30,58	29,552	53,3	47,0	29,44				64 . 43 . 8,30	+ 0,78	ε Geminorum.
	− 0 . 46 . 25,03				0,78				37 . 0 . 42,47	+ 8,98	Piazzi VI. 301. *np.*
37,52	29 . 56 . 24,95	29,560	52,8	45,8	33,47				67 . 44 . 6,70	− 2,31	δ Geminorum R.
	23,98								5,73		δ Geminorum.

Coincidence of Micrometer Wire with fixed Wire = 10r,140, 10r,143, 10r,147, 10r,153, 10r,158 at the five wires. From March 18 = 10r,135, 10r,138, 10r,142, 10r,148, 10r,153.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 3″,7. From March 17 = + 0″,4.

Adopted Zenith Point = 315°. 3′. 38″,00.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Mar. 23	ε Hydræ R. M.	89 . 45	4 . 48,0	47,5	50,4	50,0	47,9	46,7	6,737	+ 1 . 10,97			89 . 50 . 59,45	G.
	ε Hydræ	0 . 15	1 . 15,9	18,0	17,8	21,0	16,8	14,0					0 . 16 . 17,27	G.
	(*a*) Σ 1288. *sp.*	338 . 10	3 . 39,6	38,9	41,9	41,9	40,2	37,5					338 . 13 . 40,05	G.
	o^2 Cancri	351 . 5	0 . 7,2	7,7	8,5	10,9	7,7	14,7					351 . 5 . 9,45	G.
	ψ Leonis	352 . 30	1 . 44,5	44,0	46,4	46,7	44,5	41,1					352 . 31 . 44,55	G.
	λ Ursæ Maj. R. M.	126 . 30	2 . 38,5	37,8	39,9	41,4	39,2	36,1	10,431	− 6,03			126 . 32 . 32,82	G.
	λ Ursæ Majoris	323 . 30	4 . 44,5	39,2	45,8	45,4	44,8	40,7					323 . 34 . 43,47	G.
	μ Hydræ R. M.	66 . 45	4 . 40,6	39,7	42,2	43,7	41,7	39,3	7,389	+ 57,38			66 . 50 . 38,65	G.
	μ Hydræ	23 . 15	1 . 35,1	35,0	36,7	38,7	36,4	34,0					23 . 16 . 36,00	G.
Mar. 24	(*b*) ☉ S.L. M.	6 . 10	4 . 41,0	40,9	42,4	44,2	42,2	39,2	10,612	− 9,80			6 . 14 . 31,92	G.
	(*b*) ☉ N.L.	5 . 40	2 . 26,6	28,2	27,8	31,2	28,8	25,1					5 . 42 . 27,98	G.
	δ Leonis R. M.	104 . 10	3 . 14,8	13,0	14,0	17,2	13,6	10,3	7,732	+ 50,24			104 . 14 . 4,11	G.
	δ Leonis	345 . 50	3 . 12,1	9,6	13,0	14,9	14,0	8,5					345 . 53 . 12,07	G.
	α Cygni R. M.	127 . 30	3 . 38,4	37,1	39,3	41,3	37,5	35,5	8,935	+ 25,28	+1	− 0,15	127 . 34 . 3,36	G.
	α Cygni	322 . 30	3 . 13,1	10,0	14,2	14,4	12,4	8,9			+1½	+ 0,34	322 . 33 . 12,56	G.
Mar. 25	(*c*) ☉ N.L. M.	5 . 15	4 . 7,8	8,0	10,2	10,7	9,5	5,5	10,933	− 16,49			5 . 18 . 52,18	G.
	(*c*) ☉ S.L.	5 . 50	0 . 54,0	54,4	56,8	57,8	55,8	50,8					5 . 50 . 54,95	G.
	ε Hydræ R. M.	89 . 50	0 . 35,1	33,0	35,8	39,7	35,2	32,8	8,985	+ 24,11			89 . 50 . 59,38	G.
	ε Hydræ	0 . 15	1 . 15,2	15,4	18,4	21,0	16,2	12,7					0 . 16 . 16,50	G.
	Σ 1288. *sp.*	338 . 10	3 . 40,6	37,9	42,3	42,8	38,8	36,4					338 . 13 . 39,85	G.
	o^2 Cancri	351 . 5	0 . 7,6	5,4	9,6	10,1	6,8	2,1					351 . 5 . 6,93	G.
	(*d*) λ Ursæ Majoris R.	126 . 30	2 . 32,1	31,9	33,7	36,4	30,9	28,9					126 . 32 . 32,35	G.
	λ Ursæ Majoris	323 . 30	4 . 46,2	43,0	47,5	47,5	44,4	41,3					323 . 34 . 45,05	G.
	44 Leonis	357 . 40	0 . 61,8	60,9	63,0	66,2	60,9	58,0					357 . 41 . 1,82	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 49,7	49,9	51,9	52,8	49,1	46,7	11,660	− 31,64			145 . 26 . 18,39	G.
	α Ursæ Majoris	304 . 40	0 . 62,6	59,0	63,0	63,9	59,4	57,0					304 . 41 . 0,83	G.
	Σ 1507	359 . 20	2 . 53,1	51,8	56,1	57,3	52,3	49,9					359 . 22 . 53,45	G.
Mar. 27	☉ N.L. M.	4 . 30	2 . 13,8	12,5	16,1	18,2	14,0	10,7	11,400	− 26,22			4 . 31 . 48,03	G.
	☉ S.L.	5 . 0	3 . 51,8	51,0	53,0	54,0	51,0	48,2					5 . 3 . 51,55	G.
	ε Leonis R. M.	107 . 20	1 . 22,9	20,4	23,9	24,0	20,1	18,0	11,762	− 33,77			107 . 20 . 47,80	G.
	ε Leonis	342 . 45	1 . 31,3	26,6	33,2	31,7	28,7	26,1					342 . 46 . 29,62	G.
	λ Ursæ Maj. R. M.	126 . 30	2 . 26,0	24,0	28,4	29,0	22,3	23,0	9,789	+ 7,35			126 . 32 . 32,83	G.
	λ Ursæ Majoris	323 . 30	4 . 45,8	43,4	48,0	46,7	44,5	40,4					323 . 34 . 44,87	G.
Mar. 28	ε Hydræ R. M.	89 . 50	1 . 32,0	30,1	33,7	35,0	33,3	29,9	11,572	− 29,81			89 . 51 . 2,54	G.
	ε Hydræ	0 . 15	1 . 15,4	14,0	18,2	19,7	13,9	12,4					0 . 16 . 15,62	G.
	ι Ursæ Maj. R. M.	131 . 30	1 . 19,5	18,0	20,6	23,0	17,8	15,4	13,738	− 1 . 14,96			131 . 30 . 4,11	G.
	ι Ursæ Majoris	318 . 35	2 . 16,9	13,4	18,4	17,5	14,4	12,1					318 . 37 . 15,48	G.
Mar. 29	☉ N.L. M.	3 . 45	0 . 28,6	30,0	31,7	33,7	32,8	26,1	11,778	− 34,11			3 . 44 . 56,37	G
	☉ S.L.	4 . 15	1 . 57,8	59,0	62,0	62,6	61,0	55,0					4 . 16 . 59,60	G.
Apr. 5	(*e*) ☉ N.L. M.	1 . 0	4 . 11,0	12,0	15,8	15,9	15,8	9,4	12,865	− 56,72			1 . 3 . 16,73	G.
	(*e*) ☉ S.L.	1 . 35	0 . 12,9	14,0	15,0	19,0	16,0	9,9					1 . 35 . 14,47	G
	☽ S.L. M.	343 . 30	0 . 60,3	61,1	61,6	64,9	63,2	55,7	10,954	− 16,89			343 . 30 . 44,28	G.
	☽ S.L. M.	...	...	...	...	...	...	...	10,975	− 17,14	+1	+ 0,11	44,14	G.
	☽ S.L. M.	...	...	...	...	...	...	...	10,998	− 17,53	+2	+ 0,35	43,99	G.
	ι Cephei SP. R. M.	197 . 25	3 . 23,3	23,2	23,0	26,7	23,1	20,9	15,747	− 1 . 56,79			197 . 26 . 26,68	G.
	ι Cephei	252 . 40	0 . 54,0	50,4	52,9	55,5	51,6	49,8					252 . 40 . 52,40	G.
	(*f*) α Ursæ Maj. R. M.	145 . 25	1 . 38,6	38,2	38,7	41,8	38,4	36,2	10,990	− 17,64			145 . 26 . 21,06	G.
	α Ursæ Majoris	304 . 40	0 . 59,1	54,9	58,8	59,9	56,0	53,0					304 . 40 . 56,98	G.
	(*b*) ψ Ursæ Maj. R. M.	128 . 10	1 . 26,5	24,8	26,5	29,9	24,5	22,2	9,309	+ 17,41			128 . 11 . 43,19	G.
	(*b*) ψ Ursæ Majoris	321 . 55	0 . 35,8	32,4	35,8	37,7	34,7	31,0					321 . 55 . 34,58	G.
	(*f*) δ Leonis R. M.	104 . 15	0 . 37,1	34,8	35,5	40,9	35,1	32,8	14,451	− 1 . 29,60	+1	− 0,06	104 . 14 . 6,39	G.
	δ Leonis	345 . 50	3 . 10,7	7,5	11,9	11,8	9,5	5,4			+2	+ 0,23	345 . 53 . 9,80	G.
	ν Ursæ Majoris	333 . 15	4 . 22,7	17,2	23,1	23,7	20,1	17,7			+2	+ 0,41	333 . 19 . 21,29	G.
	Σ 1566	345 . 20	1 . 46,5	42,8	47,0	48,0	45,8	41,9					345 . 21 . 45,38	G.
	ν Virginis	359 . 50	1 . 17,0	15,3	18,9	20,4	16,5	13,8					359 . 51 . 17,02	G.

Runs taken April 5, 4[h].

(*a*) Faint.
(*b*) Badly defined.
(*c*) Much waving.
(*d*) Accidentally on the fixed wire.
(*e*) Much clouded.
(*f*) Indefinite.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
38,36	45 . 12 . 38,55		50,5	45,4	58,55				83 . 0 . 45,38	− 11,96	ε Hydræ R.
	39,27								46,10		ε Hydræ.
	23 . 10 . 2,05				24,89				60 . 57 . 35,22	− 5,90	Σ 1288. *sp.*
	36 . 1 . 31,45				42,29				73 . 49 . 22,02	− 9,90	o^2 Cancri.
	37 . 28 . 6,55		50,7	45,0	44,60				75 . 15 . 59,43	− 12,79	ψ Leonis.
38,15	8 . 31 . 5,18			44,7	8,73				46 . 18 . 22,19	− 8,17	λ Ursæ Maj. R.
	5,47								22,48		λ Ursæ Majoris.
37,33	68 . 12 . 59,35				2 . 24,74				106 . 2 . 32,37	− 19,61	μ Hydræ R.
	58,00								31,02		μ Hydræ.
	51 . 10 . 53,92	29,584	54,5	56,9	1 . 10,57	6,67		16 . 3,20	88 . 43 . 2,90		☉.
	50 . 38 . 49,98				1 . 9,24	6,62			4,08		☉.
38,09	30 . 49 . 33,89	29,740	51,4	45,1	34,94				68 . 37 . 17,11	− 15,95	δ Leonis R.
	34,07								17,29		δ Leonis.
37,96	7 . 29 . 34,64	29,768	48,8	43,8	7,73				45 . 16 . 50,65	− 10,83	α Cygni R.
	34,56								50,57		α Cygni.
	50 . 15 . 12,89	29,762	51,1	49,0	1 . 9,81	6,58		16 . 2,90	88 . 19 . 27,30		☉.
	50 . 47 . 15,66				1 . 11,14	6,63			25,55		☉.
37,94	45 . 12 . 39,91		46,7	42,3	59,33				83 . 0 . 47,52	− 11,96	ε Hydræ R.
	37,21								44,82		ε Hydræ.
	23 . 10 . 0,56				25,22				60 . 57 . 34,06	− 5,74	Σ 1288. *sp.*
	36 . 1 . 27,64				42,85				73 . 49 . 18,77	− 9,83	o^2 Cancri.
38,70	8 . 31 . 6,94	29,774	45,9	41,0	8,86				46 . 18 . 24,08	− 7,82	λ Ursæ Maj. R.
	5,76								29,90		λ Ursæ Majoris.
	42 . 37 . 22,53				54,37				80 . 25 . 25,18	− 15,75	44 Leonis.
39,61	− 10 . 22 . 39,10		45,8	40,2	10,85				27 . 24 . 18,33	− 7,98	α Ursæ Maj. R.
	38,46								18,97		α Ursæ Majoris.
	44 . 19 . 14,16				57,79				82 . 7 . 20,23	− 17,53	Σ 1507.
	49 . 28 . 8,74	29,720	43,7	41,2	1 . 8,91	6,50		16 . 2,30	87 . 32 . 21,73		☉.
	50 . 0 . 12,26				1 . 10,22	6,55			21,91		☉.
38,71	27 . 42 . 51,49	29,700	37,5	32,3	31,55				65 . 30 . 31,22	− 10,24	ε Leonis R.
	50,33								30,16		ε Leonis.
38,85	8 . 31 . 6,46				9,00				46 . 18 . 23,74	− 7,48	λ Ursæ Maj. R.
	5,58								22,86		λ Ursæ Majoris.
39,08	45 . 12 . 36,75	29,788	40,0	34,1	1 . 0,40				83 . 0 . 45,43	− 11,96	ε Hydræ R.
	36,33								45,01		ε Hydræ.
39,80	3 . 33 . 35,18				3,73				41 . 20 . 47,19	− 0,01	ι Ursæ Maj. R.
	36,19								48,20		ι Ursæ Majoris.
	48 . 41 . 17,08	29,940	45,0	45,2	1 . 6,98	6,42		16 . 1,80	86 . 45 . 27,72		☉.
	49 . 13 . 20,31				1 . 8,25	6,47			28,57		☉.
	45 . 59 . 37,44	29,682	51,4	53,0	59,48	6,13		15 . 59,80	84 . 3 . 38,87		☉.
	46 . 31 . 35,18				1 . 0,59	6,19			38,06		☉.
	28 . 27 . 4,99	29,754	52,6	52,0					65 . 33 . 15,26		☽.
	4,85				31,30	26 . 19,04		15 . 10,27	15,12		☽.
	4,70								14,97		☽.
39,54	− 62 . 22 . 47,39	29,876	47,8	42,8	1 . 52,51				− 24 . 37 . 31,62	− 2,72	ι Cephei SP. R.
	46,89								31,12		ι Cephei SP.
39,02	− 10 . 22 . 41,77				10,83				27 . 24 . 15,68	− 5,24	α Ursæ Maj. R.
	42,31								15,14		α Ursæ Majoris.
38,89	6 . 51 . 56,10				7,12				44 . 39 . 11,50	− 9,35	ψ Ursæ Maj. R.
	55,29								10,69		ψ Ursæ Majoris.
38,10	30 . 49 . 32,90				35,27				68 . 37 . 16,45	− 14,83	δ Leonis R.
	30,51								14,06		δ Leonis.
	18 . 15 . 42,00				19,51				56 . 3 . 9,79	− 12,40	ν Ursæ Majoris.
	30 . 18 . 6,09	29,900	46,7	42,4	34,59				68 . 5 . 48,96	− 15,91	Σ 1566.
	44 . 47 . 37,73				58,73				82 . 35 . 44,74	− 18,32	ν Virginis.

Coincidence of Micrometer Wire with fixed Wire = 10r,135, 10r,138, 10r,142, 10r,148, 10r,153 at the five wires. From April 5 = 10r,134, 10r,139, 10r,144, 10r,153, 10r,157.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 0″,4. From April 5 = + 0″,9.

Adopted Zenith Point = 315°. 3′. 38″,00. From March 25 = 315°. 3′. 39″,29.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Apr. 7	ϕ^2 Cancri. *sp.*	339 . 45	4 . 34,6	34,0	34,2	37,3	35,4	32,0					339 . 49 . 34,72	G.
Apr. 8	⊙ S.L. M.	0 . 25	3 . 16,8	18,3	19,8	22,0	19,0	15,2	12,869	− 56,80			0 . 27 . 21,82	G.
	⊙ N.L.	359 . 55	0 . 24,2	24,9	25,5	29,0	26,5	21,9					359 . 55 . 25,35	G.
Apr. 10	54 Leonis. *np.*	341 . 40	0 . 64,0	60,3	65,4	65,2	62,0	58,2					341 . 41 . 2,60	G.
	(*a*) α Ursæ Maj. R. M.	145 . 25	1 . 36,9	36,9	37,8	40,0	35,1	34,8	10,768	− 13,01			145 . 26 . 24,04	G.
	α Ursæ Majoris	304 . 40	0 . 59,7	56,0	60,9	60,2	55,9	54,0					304 . 40 . 57,87	G.
	p^3 Leonis	4 . 25	2 . 13,8	13,0	16,3	17,9	12,2	10,7					4 . 27 . 14,17	G.
	δ Leonis R. M.	104 . 10	3 . 51,8	50,1	52,3	55,9	48,8	48,0	9,327	+ 17,04			104 . 14 . 8,51	G.
	δ Leonis	345 . 50	3 . 9,8	6,0	11,8	11,0	8,8	4,7					345 . 53 . 8,95	G.
	ξ Ursæ Majoris. *np.*	334 . 50	1 . 38,4	35,0	39,8	39,9	35,8	33,1					334 . 51 . 37,13	G.
	B.A.C. 4218	356 . 40	0 . 45,2	42,8	47,6	49,6	44,0	42,4					356 . 40 . 45,33	G.
	24 Comæ Beren. *f.*	348 . 0	1 . 36,8	32,8	37,8	36,8	33,9	31,1					348 . 1 . 35,00	G.
	(*b*) γ^1 Virginis R.	82 . 15	1 . 35,2	32,9	35,7	37,6	32,5	30,9					82 . 16 . 34,27	G.
	γ^1 Virginis	7 . 50	0 . 46,0	44,0	47,0	49,7	43,9	41,8					7 . 50 . 45,47	G.
	α Cassiopeiæ R. M.	138 . 30	1 . 41,9	42,2	44,4	46,3	42,0	39,4	11,199	− 21,98			138 . 31 . 20,87	G.
	(*c*) α Cassiopeiæ	311 . 35	0 . 62,4	58,0	62,3	62,4	59,7	55,0					311 . 36 . 0,05	G.
Apr. 11	⊙ N.L. M.	358 . 50	0 . 20,1	18,1	23,0	23,4	19,8	14,9	14,980	− 1 . 40,82			358 . 48 . 39,10	G.
	(*d*) ⊙ S.L.	359 . 20	0 . 32,7	31,8	35,0	35,7	32,5	29,0					359 . 20 . 32,83	G.
	ϕ^2 Cancri. *sp.*	339 . 45	4 . 33,8	31,8	34,8	34,8	32,7	30,1					339 . 49 . 33,38	G.
	(*e*) ψ Leonis	352 . 30	1 . 43,6	41,2	45,1	43,9	42,0	39,4			+2	+ 0,16	352 . 31 . 42,83	G.
Apr. 12	☽ N.L. M.	11 . 45	1 . 48,0	49,0	51,8	49,5	48,1	45,2	9,347	+ 16,62			11 . 47 . 5,37	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,137	+ 21,18	+1	− 4,43	5,50	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,960	+ 24,95	+2	− 8,88	4,82	G.
	(*a*) δ Ursæ Maj. R. M.	140 . 45	0 . 13,9	16,8	16,1	19,3	14,5	12,1	11,255	− 23,15			140 . 44 . 52,32	G.
	δ Ursæ Majoris	309 . 20	2 . 28,5	27,9	30,8	29,8	26,1	25,0					309 . 22 . 28,22	G.
Apr. 13	γ Ursæ Maj. R. M.	137 . 20	4 . 18,7	20,8	21,6	22,3	19,8	18,9	9,184	+ 20,01			137 . 24 . 40,73	G.
	γ Ursæ Majoris	312 . 40	2 . 39,4	37,0	40,8	39,0	36,8	34,8					312 . 42 . 38,18	G.
	(*f*) ο Virginis R.	92 . 25	2 . 41,8	41,4	42,5	44,9	40,8	39,1					92 . 27 . 41,97	G.
	(*f*) ο Virginis	357 . 35	4 . 33,2	32,9	36,4	37,0	34,9	32,9					357 . 39 . 34,93	G.
	(*g*) Σ 1634	343 . 25	3 . 57,1	55,0	61,0	58,9	57,0	53,8					343 . 28 . 57,47	G.
Apr. 17	⊙ N.L. M.	356 . 35	4 . 35,6	36,1	38,1	40,9	40,1	35,8	11,993	− 38,62			356 . 38 . 59,15	G.
	⊙ S.L.	357 . 10	0 . 47,8	49,2	49,5	54,2	51,4	46,8					357 . 10 . 49,82	G.
	p^3 Leonis	4 . 25	2 . 13,9	14,0	15,0	18,4	16,0	12,1					4 . 27 . 14,90	G.
	(*h*) Σ 1566	345 . 20	1 . 44,0	42,0	43,5	45,2	44,4	41,1					345 . 21 . 43,37	G.
	ν Virginis	359 . 50	1 . 15,7	16,0	17,1	19,9	17,1	14,8					359 . 51 . 16,77	G.
	(*i*) ⁎ Æ. 11ʰ. 39ᵐ. 34ˢ.	0 . 25	4 . 61,0	62,1	62,5	66,1	63,1	59,0					0 . 30 . 2,30	G.
	⁎ Æ. 11ʰ. 54ᵐ. 23ˢ.	2 . 10	0 . 3,0	3,0	4,0	6,7	4,1	0,6					2 . 10 . 3,57	G.
	(*k*) Polaris SP. R. M.	174 . 20	2 . 18,2	19,1	18,9	21,8	20,6	17,1	12,505	− 49,29		+ 2,53	174 . 21 . 32,42	G.
	(*k*) Polaris SP.	275 . 45	0 . 49,7	49,9	50,1	52,4	50,0	47,3				− 2,85	275 . 45 . 47,05	G.
	ζ Virginis R. M.	83 . 5	0 . 52,0	52,1	52,8	56,9	53,0	49,2	14,749	− 1 . 36,08			83 . 4 . 16,59	G.
	ζ Virginis	7 . 0	2 . 59,1	57,9	60,0	60,9	58,9	56,6					7 . 2 . 58,90	G.
Apr. 18	⊙ S.L. M.	356 . 50	0 . 21,9	20,2	24,1	25,1	24,9	20,0	11,870	− 36,06			356 . 49 . 46,64	G.
	⊙ N.L.	356 . 15	2 . 53,1	50,5	54,4	55,4	54,4	50,0					356 . 17 . 52,97	G.
	54 Leonis. *np.*	341 . 40	0 . 61,0	62,1	62,3	64,5	62,2	57,4					341 . 41 . 1,58	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 44,9	47,8	46,1	49,8	46,5	44,6	11,224	− 22,59			145 . 26 . 24,03	G.
	α Ursæ Majoris	304 . 40	0 . 55,0	54,8	55,1	57,2	54,4	51,0					304 . 40 . 54,58	G.
Apr. 19	(*l*) ⊙ N.L. M.	355 . 55	2 . 14,5	16,0	17,1	20,3	18,1	12,4	10,828	− 14,35			355 . 57 . 2,05	G.
	(*l*) ⊙ S.L.	356 . 25	3 . 48,9	50,8	51,1	53,1	52,2	46,9					356 . 28 . 50,50	G.
Apr. 20	⊙ S.L. M.	356 . 5	3 . 18,7	19,3	20,4	23,8	22,7	15,0	10,629	− 10,20			356 . 8 . 9,78	G.
	⊙ N.L.	355 . 35	1 . 17,8	20,4	19,7	23,0	23,0	15,9					355 . 36 . 19,97	G.
	λ Ursæ Maj. R. M.	126 . 30	2 . 19,2	18,1	18,3	22,3	18,7	16,2	9,289	+ 17,74			126 . 32 . 36,54	G.
	λ Ursæ Majoris	323 . 30	4 . 40,1	40,0	39,9	41,5	40,3	36,4					323 . 34 . 39,70	G.

Runs and Coincidences at the five wires taken April 10, 23ʰ.
Runs and Coincidence at the middle wire taken April 16, 23ʰ.
April 17, 10ʰ, Molyneux fast on Hardy, 1ᵐ. 16ˢ.

(*a*) Indefinite. (*b*) Accidentally on the fixed wire. (*c*) Faint and unsteady. (*d*) Bad definition. (*e*) Cloudy. (*f*) Bisected by fixed wire, but not well. (*g*) Not seen double. (*h*) Not seen double: no star near this. (*i*) No correction for Runs. (*k*) Times of observation by Molyneux, 13ʰ. 10ᵐ. 0ˢ and 13ʰ. 10ᵐ. 26ˢ. (*l*) Very badly defined.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
	24 . 45 . 55,43	29,386	54,4	52,1	26,81				62 . 33 . 30,02	− 3,80	φ² Cancri. *sp.*
	45 . 23 . 42,53	29,458	53,1	53,0	57,81	6,06		15 . 59,00	82 . 55 . 43,56		⊙.
	44 . 51 . 46,06				56,75	6,01			44,08		⊙.
	26 . 37 . 23,31	29,850	40,6	32,3	30,27				64 . 25 . 1,86	− 12,39	54 Leonis. *np.*
40,96	− 10 . 22 . 44,75				11,06				27 . 24 . 12,47	− 4,09	α Ursæ Maj. R.
	41,42								15,80		α Ursæ Majoris.
	49 . 23 . 34,88				1 . 10,33				87 . 11 . 53,49	− 18,14	p³ Leonis.
38,73	30 . 49 . 30,78				36,02				68 . 37 . 15,08	− 14,33	δ Leonis R.
	29,66								13,96		δ Leonis.
	19 . 47 . 57,84				21,74				57 . 35 . 27,86	− 12,33	ξ Urs. Maj. *np.*
	41 . 37 . 6,04	29,846	38,0	30,2	53,83				79 . 25 . 8,15	− 18,53	B.A.C. 4218.
	32 . 57 . 55,71				39,31				70 . 45 . 43,30	− 17,20	24 Com. Beren. *f.*
39,87	52 . 47 . 5,02				1 . 19,70				90 . 35 . 33,00	− 19,70	γ¹ Virginis R.
	6,18								34,16		γ¹ Virginis.
40,46	− 3 . 27 . 41,58	29,902	42,9	38,4	3,61				34 . 19 . 23,09	+ 3,79	α Cassiopeiæ R.
	39,24								25,43		α Cassiopeiæ.
	43 . 44 . 59,81	29,900	42,1	39,7	56,95	5,89		15 . 58,20	81 . 48 . 57,35		⊙.
	44 . 16 . 53,54				58,01	5,94			55,69		⊙.
	24 . 45 . 54,09	29,924	40,4	34,9	27,77				62 . 33 . 30,14	− 3,61	φ² Cancri. *sp.*
	37 . 28 . 3,54			34,0	46,20				75 . 15 . 58,02	− 11,92	ψ Leonis.
	56 . 43 . 26,08	29,732	38,0	33,0	1 . 31,27	50 . 54,62		16 . 39,56	93 . 57 . 50,57		☽.
	26,21								50,72		☽.
	25,53								50,04		☽.
40,27	− 5 . 41 . 13,03				5,98				32 . 5 . 49,27	− 9,92	δ Ursæ Maj. R.
	11,07								51,23		δ Ursæ Majoris.
39,46	− 2 . 21 . 1,44	29,900	37,1	31,5	2,49				35 . 26 . 4,35	− 8,87	γ Ursæ Maj. R.
	1,11								4,68		γ Ursæ Majoris.
38,45	42 . 35 . 57,32				55,65				80 . 24 . 1,25	− 18,00	o Virginis R.
	55,64								23 . 59,57		o Virginis.
	28 . 25 . 18,18				32,78				66 . 12 . 59,24	− 16,09	Σ 1634.
	41 . 35 . 19,86	29,884	55,0	58,0	50,83	5,64		15 . 56,60	79 . 39 . 9,93		⊙.
	42 . 7 . 10,53				51,79	5,70			8,30		⊙.
	49 . 23 . 35,61	30,018	49,0	43,9	1 . 9,02				87 . 11 . 52,91	− 17,98	p³ Leonis.
	30 . 18 . 4,08				34,69				68 . 5 . 47,05	− 14,50	Σ 1566.
	44 . 47 . 37,48				58,88				82 . 35 . 44,64	− 17,78	ν Virginis.
	45 . 26 . 23,01				1 . 0,22				83 . 14 . 31,51	− 18,00	⁎Æ.11ʰ.39ᵐ.34ˢ.
	47 . 6 . 24,28				1 . 3,82				84 . 54 . 36,38	− 18,54	⁎Æ.11ʰ.54ᵐ.23ˢ.
39,74	− 39 . 17 . 53,13	30,028	46,0	40,5	48,83				− 1 . 31 . 33,68	+ 7,57	Polaris SP. R.
	52,24								32,79		Polaris SP.
37,75	51 . 59 . 22,70				1 . 16,25				89 . 47 . 47,23	− 19,11	ζ Virginis R.
	19,61								44,14		ζ Virginis.
	41 . 46 . 7,35	30,074	54,0	53,7	51,93	5,66		15 . 56,40	79 . 18 . 5,50		⊙.
	14 . 13,68				50,97	5,60			3,73		⊙.
	26 . 37 . 22,29	30,020	50,8	46,6	29,54				64 . 25 . 0,11	− 11,49	54 Leonis. *np.*
39,30	− 10 . 22 . 44,74				10,80				27 . 24 . 12,74	− 2,39	α Ursæ Maj. R.
	44,71								12,77		α Ursæ Majoris.
	40 . 53 . 22,76	29,900	51,5	53,0	50,13	5,56		15 . 56,10	78 . 57 . 11,71		⊙.
	41 . 25 . 11,21				51,08	5,62			8,85		⊙.
	41 . 4 . 30,49	29,668	57,0	60,1	49,36	5,58		15 . 55,80	78 . 36 . 26,75		⊙.
	40 . 32 . 40,68				48,44	5,52			27,68		⊙.
38,12	8 . 31 . 2,75	29,750	56,7	54,0	8,62				46 . 18 . 19,65	− 3,83	λ Ursæ Maj. R.
	0,41								17,31		λ Ursæ Majoris.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,134, 10ʳ,139, 10ʳ,144, 10ʳ,153, 10ʳ,157 at the five wires. From April 17 = 10ʳ,130, 10ʳ,135, 10ʳ,140, 10ʳ,149, 10ʳ,153.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 0″,9. From April 10 = + 2″,5. From April 17 = 0″,0.

Adopted Zenith Point = 315°. 3′. 39″,29.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Apr. 20	(*a*) α Ursæ Majoris R.	145 . 25	1 . 23,8	24,1	22,9	27,1	24,1	22,8					145 . 26 . 24,13	G.
	α Ursæ Majoris...	304 . 40	0 . 55,5	53,1	55,0	56,0	54,8	50,7					304 . 40 . 54,18	G.
	p^3 Leonis.........	4 . 25	2 . 16,1	15,8	16,4	18,8	17,9	12,1					4 . 27 . 16,18	G.
	δ Leonis R. M. ...	104 . 10	3 . 29,9	28,3	27,8	32,1	28,9	26,0	8,310	+ 38,15			104 . 14 . 6,98	G.
	δ Leonis..........	345 . 50	3 . 7,5	7,1	8,1	11,0	9,7	5,0					345 . 53 . 8,07	G.
	γ Cephei SP. R. M.	186 . 5	0 . 38,0	37,2	36,1	40,9	38,8	35,0	14,134	− 1 . 23,25			186 . 4 . 14,42	G.
	γ Cephei SP......	264 . 0	3 . 3,0	1,5	2,4	4,0	2,1	0,0			+1	− 0,63	264 . 3 . 1,54	G.
	ν Virginis........	359 . 50	1 . 16,1	17,1	17,2	19,4	18,0	13,4					359 . 51 . 16,87	G.
	✱ Æ. 11ʰ. 39ᵐ. 34ˢ.	0 . 30	0 . 3,1	4,5	4,2	7,8	5,3	0,1					0 . 30 . 4,17	G.
	✱ Æ. 11ʰ. 54ᵐ. 23ˢ.	2 . 10	0 . 3,9	4,1	5,0	7,8	5,5	1,3					2 . 10 . 4,60	G.
	γ Aquilæ R. M...	93 . 5	0 . 13,2	11,2	10,3	13,7	10,9	7,5	8,782	+ 28,30			93 . 5 . 39,43	G.
	γ Aquilæ.........	357 . 0	1 . 35,9	33,3	35,6	39,0	36,1	33,1					357 . 1 . 35,50	G.
	(*b*) ☽ N.L. M.........	26 . 35	2 . 15,4	14,6	14,9	16,2	15,5	12,5	9,955	+ 3,64	−2	− 5,44	26 . 37 . 13,05	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,118	+ 0,36	−1	− 2,66	12,55	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,222	− 1,71			13,14	G.
Apr. 21	Σ 1507............	359 . 20	2 . 51,4	52,8	54,0	54,8	54,0	48,9					359 . 22 . 52,65	G.
	(*c*) Σ 1541...........	320 . 5	1 . 56,4	53,9	56,6	56,9	55,5	51,9					320 . 6 . 55,20	G.
	γ Cephei SP. R. M.	186 . 5	1 . 18,0	18,3	16,7	21,4	18,1	15,4	16,040	−2 . 2,98			186 . 4 . 15,00	G.
	γ Cephei SP......	264 . 0	3 . 3,4	2,0	3,1	5,1	2,2	0,8					264 . 3 . 2,77	G.
Apr. 24	⊙ S.L. M.........	354 . 45	2 . 23,3	23,0	24,8	26,9	24,6	21,3	10,670	− 11,05			354 . 47 . 12,93	G.
	⊙ N.L............	354 . 15	0 . 24,4	25,1	25,8	29,4	27,3	22,2					354 . 15 . 25,70	G.
	Σ 1507............	359 . 20	2 . 51,0	51,0	52,7	54,8	51,2	48,9					359 . 22 . 51,60	G.
	δ Leonis R. M. ...	104 . 10	3 . 35,0	33,1	33,0	37,2	32,5	30,3	8,458	+ 35,06			104 . 14 . 8,58	G.
	δ Leonis..........	345 . 50	3 . 8,3	5,8	9,8	10,6	7,3	4,1					345 . 53 . 7,65	G.
	Σ 1564. *p*.........	339 . 25	1 . 42,2	39,0	41,5	43,7	40,4	37,4					339 . 26 . 40,70	G.
	Polaris SP. R. M.	174 . 20	2 . 43,9	41,8	43,8	47,4	43,0	42,1	13,529	− 1 . 10,64			174 . 21 . 33,03	G.
	Polaris SP.	275 . 45	0 . 46,7	44,7	47,0	47,9	44,2	42,6					275 . 45 . 45,52	G.
	β Ursæ Min. R. M.	157 . 35	3 . 12,5	10,0	12,4	14,5	11,0	9,4	10,700	− 11,67			157 . 37 . 59,96	G.
	β Ursæ Minoris...	292 . 25	4 . 23,0	18,9	21,2	23,4	17,8	18,8					292 . 29 . 20,52	G.
Apr. 25	α Ursæ Maj. R. M.	145 . 25	1 . 8,8	10,9	10,1	14,2	8,8	6,9	9,396	+ 15,50			145 . 26 . 25,45	G.
	α Ursæ Majoris...	304 . 40	0 . 54,8	53,0	55,4	56,8	51,9	50,4					304 . 40 . 53,72	G.
	ν Ursæ Majoris....	333 . 15	4 . 20,2	17,4	20,8	22,8	18,3	16,3			+2	+ 0,41	333 . 19 . 19,71	G.
	(*c*) Σ 1541...........	320 . 5	1 . 58,0	54,9	58,8	59,0	54,7	52,8					320 . 6 . 56,37	G.
	B.A.C. 4006......	11 . 40	2 . 59,8	57,9	61,3	61,2	58,6	55,5					11 . 42 . 59,05	G.
May 1	(*d*) ⊙ N.L. M........	352 . 0	2 . 23,7	24,0	23,0	28,9	26,6	21,2	11,152	− 21,24			352 . 2 . 3,13	G.
	(*d*) ⊙ S.L............	352 . 30	3 . 44,9	44,6	44,8	49,1	47,1	42,8					352 . 33 . 45,22	G.
	(*e*) Capella R. M.....	128 . 40	0 . 35,2	37,8	32,0	39,8	36,8	31,8	9,463	+ 13,97			128 . 40 . 49,49	G.
	(*e*) Capella...........	321 . 25	1 . 27,0	23,5	24,8	27,0	25,9	22,0					321 . 26 . 24,92	G.
	(*f*) α Ursæ Majoris R.	145 . 25	1 . 29,4	29,1	27,9	31,4	29,2	27,0					145 . 26 . 28,87	G.
	α Ursæ Majoris...	304 . 40	0 . 51,4	50,1	50,1	54,4	51,3	47,5					304 . 40 . 50,73	G.
	p^3 Leonis.........	4 . 25	2 . 15,1	14,5	15,5	18,1	16,8	12,0					4 . 27 . 15,13	G.
	δ Leonis R. M. ...	104 . 10	3 . 28,7	26,9	25,9	30,7	28,3	25,0	8,144	+ 41,46			104 . 14 . 8,74	G.
	δ Leonis..........	345 . 50	3 . 7,2	5,6	7,4	9,9	8,2	4,1					345 . 53 . 6,80	G.
	ξ Ursæ Majoris. *np*.	334 . 50	1 . 34,9	32,9	31,7	36,0	35,0	30,9					334 . 51 . 33,43	G.
	β Leonis R. M....	98 . 15	3 . 27,3	27,1	26,3	31,1	27,2	25,0	10,741	− 12,68			98 . 18 . 14,35	G.
	β Leonis.........	351 . 45	3 . 61,6	59,1	62,0	63,3	62,0	58,0					351 . 49 . 0,65	G.
	γ Ursæ Maj. R. M.	137 . 20	3 . 20,8	20,5	19,9	22,8	21,5	18,8	6,141	+ 1 . 23,21			137 . 24 . 43,64	G.
	γ Ursæ Majoris...	312 . 40	2 . 35,5	32,0	33,4	35,3	33,8	30,1					312 . 42 . 33,13	G.
	ζ Ursæ Majoris. *np*.	311 . 30	1 . 56,0	53,3	54,1	56,4	54,6	49,8					311 . 31 . 53,87	G.
	Σ 1783............	325 . 25	1 . 52,1	49,8	50,5	52,5	51,2	47,0			+2	+ 0,54	325 . 26 . 50,91	G.
	Σ 1785. *n*.........	339 . 30	0 . 15,7	12,9	14,0	17,0	15,1	10,7					339 . 30 . 14,22	G.
	(*g*) α¹ Libræ R. M....	67 . 30	0 . 12,3	11,9	10,8	15,6	11,9	9,4	3,585	+ 2 . 16,31	−1	+ 0,04	67 . 32 . 28,32	G.
	α¹ Libræ..........	22 . 30	4 . 48,3	48,4	48,5	51,3	49,0	47,6			+2	− 0,16	22 . 34 . 48,27	G.
	(*g*) α² Libræ R. M....	...	...	...	...	...	...	...	11,400	− 26,41			67 . 29 . 45,56	G.
	α² Libræ M.......	...	...	...	...	...	...	...	2,439	+ 2 . 40,77	+3	− 0,37	22 . 37 . 28,83	G.
May 2	⊙ S.L. M.	352 . 15	1 . 26,0	26,0	24,8	28,9	28,1	21,7	12,279	− 44,73			352 . 15 . 41,07	G.
	⊙ N.L............	351 . 40	3 . 55,4	56,2	56,4	59,1	57,9	51,1					351 . 43 . 55,68	G.

Coincidence at the middle wire taken May 1, 3ʰ.
Runs taken May 1, 9ʰ.

(*a*) Accidentally on the fixed wire.
(*b*) Faint.
(*c*) Not seen double. The only star in the field.
(*d*) Badly defined. (*e*) Unsteady.
(*f*) Accidentally on the fixed wire. Indefinite and not well bisected. (*g*) Too much wind.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
39,16	− 10 . 22 . 44,84		55,4	51,0	10,60				27 . 24 . 12,84	− 1,97	α Ursæ Maj. R.
	45,11								12,57		α Ursæ Majoris.
	49 . 23 . 36,89				1 . 7,41				87 . 11 . 52,58	− 17,90	p^3 Leonis.
37,53	30 . 49 . 32,31				34,53				68 . 37 . 15,12	− 13,24	δ Leonis R.
	28,78								11,59		δ Leonis.
37,98	− 51 . 0 . 35,13		53,8	50,3	1 . 11,49				− 13 . 14 . 38,34	− 1,14	γ Cephei SP. R.
	37,75								40,96		γ Cephei SP.
	44 . 47 . 37,58				57,49				82 . 35 . 43,35	− 17,62	ν Virginis.
	45 . 26 . 24,88				58,80				83 . 14 . 31,96	− 17,84	⁎Æ.11^h.39^m.34^s.
	47 . 6 . 25,31				1 . 2,31				84 . 54 . 35,90	− 18,41	⁎Æ.11^h.54^m.23^s.
37,47	41 . 57 . 59,86	29,774	49,7	40,9	53,15				79 . 46 . 1,29	− 6,23	γ Aquilæ R.
	56,21								45 . 57,64		γ Aquilæ.
	71 . 33 . 33,76			41,8					108 . 45 . 54,03		☽.
	33,26				2 . 55,25	52 . 59,17		15 . 15,91	53,53		☽.
	33,85								54,12		☽.
	44 . 19 . 13,36	29,798	53,6	48,9	56,80				82 . 7 . 18,44	− 16,55	Σ 1507.
	5 . 3 . 15,91				5,15				42 . 50 . 29,34	− 7,05	Σ 1541.
38,89	− 51 . 0 . 35,71	−		48,1	1 . 11,93				− 13 . 14 . 39,36	− 1,36	γ Cephei SP. R.
	36,52								40,17		γ Cephei SP.
	39 . 43 . 33,64	29,978	53,0	52,2	48,32	5,42		15 . 54,80	77 . 15 . 30,02		☉.
	11 . 46,41				47,41	5,35			31,55		☉.
	44 . 19 . 12,31	29,976	48,7	40,8	58,10				82 . 7 . 18,69	− 16,39	Σ 1507.
38,12	30 . 49 . 30,71				35,53				68 . 37 . 14,52	− 12,83	δ Leonis R.
	28,36								12,17		δ Leonis.
	24 . 23 . 1,41			40,3	27,02				62 . 10 . 36,71	− 12,10	Σ 1564. *p.*
39,28	− 39 . 17 . 53,74	29,966	46,8	38,4	48,94				− 1 . 31 . 34,40	+ 5,52	Polaris SP. R.
	53,77								34,43		Polaris SP.
40,24	− 22 . 34 . 20,67	29,930	43,9	36,0	24,97				15 . 12 . 22,64	− 13,88	β Ursæ Min. R.
	18,77								24,54		β Ursæ Minoris.
39,59	− 10 . 22 . 46,16	29,558	47,2	42,1	10,73				27 . 24 . 11,39	− 1,08	α Ursæ Maj. R.
	45,57								11,98		α Ursæ Majoris.
	18 . 15 . 40,42				19,33				56 . 3 . 8,03	− 9,32	ν Ursæ Majoris.
	5 . 3 . 17,08				5,18				42 . 50 . 30,54	− 6,32	Σ 1541.
	56 . 39 . 19,76	29,550	45,5	40,8	1 . 29,01				94 . 27 . 57,95	− 20,13	B.A.C. 4006.
	36 . 58 . 24,20	30,122	60,0	64,4	42,92	5,08		15 . 53,10	75 . 2 . 3,42		☉.
	37 . 30 . 6,29				43,75	5,15			0,07		☉.
37,21	6 . 22 . 49,44	30,128	61,1	65,5	6,37				44 . 10 . 4,09		Capella R.
	45,99								0,64		Capella.
39,80	− 10 . 22 . 49,94	30,178	56,1	52,6	10,72				27 . 24 . 7,62	− 0,06	α Ursæ Maj. R.
	48,20								9,36		α Ursæ Majoris.
	49 . 23 . 36,20				1 . 8,15				87 . 11 . 52,63	− 17,50	p^3 Leonis.
37,77	30 . 49 . 30,19				34,91				68 . 37 . 13,38	− 12,13	δ Leonis R.
	27,87								11,06		δ Leonis.
	19 . 47 . 54,50				21,07				57 . 35 . 23,85	− 9,34	ξ Ursæ Maj. *np.*
37,50	36 . 45 . 24,58	30,182	55,0	50,0	43,93				74 . 33 . 16,79	− 14,87	β Leonis R.
	21,72								13,93		β Leonis.
38,39	− 2 . 21 . 4,71				2,42				35 . 26 . 1,15	− 4,85	γ Ursæ Maj. R.
	5,80								0,06		γ Ursæ Majoris.
	− 3 . 31 . 45,06		52,4	46,9	3,65				34 . 15 . 19,57	− 9,45	ζ Ursæ Maj. *np.*
	10 . 23 . 11,98		51,8	45,9	10,88				48 . 10 . 31,14	− 12,63	Σ 1783.
	24 . 26 . 35,29				26,97				62 . 14 . 10,54	− 14,77	Σ 1785. *n.*
38,30	67 . 31 . 10,61	30,174	50,4	44,7	2 . 22,75				105 . 20 . 41,64	− 16,71	α^1 Libræ R.
	9,34								40,37		α^1 Libræ.
37,20	67 . 33 . 53,37				2 . 23,06				105 . 23 . 24,71	− 16,63	α^2 Libræ R.
	49,90								21,24		α^2 Libræ.
	37 . 12 . 2,14	30,096	59,4	62,0	43,45	5,11		15 . 52,80	74 . 43 . 55,96		☉.
	36 . 40 . 16,75				42,62	5,05			55,40		☉.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,130, 10ʳ,135, 10ʳ,140, 10ʳ,149, 10ʳ,153 at the five wires. From May 1 = 10ʳ,120, 10ʳ,125, 10ʳ,133, 10ʳ,140, 10ʳ,146.

One Micrometer Revolution = 20″,844.

Correction for Runs = 0″,0. From May 1 = − 2″,6.

Adopted Zenith Point = 315° . 3′ . 39″,29. From May 1 = 315° . 3′ . 38″,93.

Assumed Co-latitude = 37° . 47′ . 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
May 2	(a) Capella R. M.	128 . 40	1 . 22,1	20,5	18,4	24,7	21,3	18,0	11,561	− 29,77			128 . 40 . 50,95	G.
	Capella	321 . 25	1 . 25,8	25,5	24,0	27,9	26,7	21,2					321 . 26 . 25,07	G.
	β Tauri R. M.	111 . 15	3 . 25,5	24,9	23,0	28,9	25,1	22,1	7,472	+ 55,47			111 . 19 . 20,09	G.
	β Tauri	338 . 45	2 . 53,7	52,9	54,1	57,8	56,1	50,6					338 . 47 . 53,95	G.
May 3	(b) ⊙ N.L. M.	351 . 25	1 . 21,0	21,2	20,9	26,3	23,6	18,0	10,958	− 17,20			351 . 26 . 4,52	G.
	⊙ S.L.	351 . 55	2 . 47,5	45,5	47,9	50,1	47,3	42,3					351 . 57 . 46,52	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 19,3	20,3	19,1	22,1	20,1	16,5	9,755	+ 7,88			145 . 26 . 27,33	G.
	α Ursæ Majoris	304 . 40	0 . 55,0	52,2	53,7	56,9	52,3	50,4					304 . 40 . 53,33	G.
	ψ Ursæ Maj. R. M.	128 . 10	1 . 18,5	18,0	17,2	20,6	18,3	13,2	8,680	+ 30,28			128 . 11 . 47,80	G.
	ψ Ursæ Majoris	321 . 55	0 . 30,9	30,2	29,0	32,6	30,7	27,0					321 . 55 . 30,02	G.
	δ Leonis R. M.	104 . 10	3 . 24,7	22,9	22,8	25,3	23,0	19,9	7,926	+ 46,01			104 . 14 . 8,81	G.
	δ Leonis	345 . 50	3 . 8,9	6,4	8,4	11,0	7,9	4,5			+2	+ 0,23	345 . 53 . 7,81	G.
	ξ Ursæ Majoris. *np*.	334 . 50	1 . 37,6	36,0	35,0	38,1	36,4	32,5					334 . 51 . 35,80	G.
	B.A.C. 4006	11 . 40	2 . 59,0	59,2	59,7	61,8	59,4	55,9					11 . 42 . 58,90	G.
	(c) Polaris SP. R. M.	174 . 20	2 . 24,0	22,7	23,1	26,0	24,5	20,8	12,390	− 47,21		+ 3,46	174 . 21 . 39,57	G.
	Polaris SP.	275 . 45	0 . 48,4	45,9	46,8	49,4	46,2	43,3				− 3,90	275 . 45 . 42,70	G.
	ζ Ursæ Majoris. *np*.	311 . 30	1 . 57,8	54,8	55,7	57,4	54,9	50,6			+1	+ 0,22	311 . 31 . 55,25	G.
	(d) Σ 1825	346 . 20	4 . 44,8	42,8	45,0	46,4	44,1	40,9			+2	+ 0,23	346 . 24 . 43,83	G.
May 4	(e) ⊙ S.L. M.	351 . 35	4 . 27,7	28,4	28,0	23,0	29,4	25,0	8,039	+ 43,65			351 . 40 . 11,85	G.
	⊙ N.L.	351 . 5	3 . 27,0	26,9	27,0	31,5	30,0	23,9					351 . 8 . 27,42	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 33,0	31,4	31,7	35,0	32,4	30,0	10,367	− 4,88			145 . 26 . 27,24	G.
	α Ursæ Majoris	304 . 40	0 . 53,2	51,2	52,7	54,8	50,9	48,0					304 . 40 . 51,73	G.
	ψ Ursæ Maj. R. M.	128 . 10	1 . 20,9	19,2	19,0	23,2	18,0	15,3	8,789	+ 28,00			128 . 11 . 47,15	G.
	ψ Ursæ Majoris	321 . 55	0 . 30,1	29,4	28,9	32,9	29,9	26,3					321 . 55 . 29,53	G.
	ε Bootis R. M.	110 . 35	0 . 30,2	29,1	28,0	32,1	27,2	24,9	10,469	− 7,01			110 . 35 . 21,52	G.
	ε Bootis	339 . 30	1 . 58,8	55,8	56,0	60,2	55,5	53,5					339 . 31 . 56,47	G.
May 5	(e) ☽ N.L. M.	347 . 55	3 . 24,3	21,4	23,1	25,3	23,8	19,9	9,735	+ 8,30			347 . 58 . 30,97	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,597	+ 11,31	+1	− 2,49	31,49	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,471	+ 14,07	+2	− 4,87	31,87	G.
May 10	ν Ursæ Majoris M.	333 . 15	4 . 32,8	31,1	31,8	36,2	33,3	29,9	10,810	− 14,07			333 . 19 . 18,25	G.
	γ Ursæ Maj. R. M.	137 . 20	4 . 20,4	18,4	19,7	22,4	19,4	17,8	8,842	+ 26,95			137 . 24 . 46,45	G.
	γ Ursæ Majoris	312 . 40	2 . 35,9	32,0	33,9	36,3	32,1	29,5					312 . 42 . 33,17	G.
	ο Virginis R. M.	92 . 25	2 . 50,3	27,9	28,1	31,8	27,2	26,0	9,313	+ 17,14			92 . 27 . 45,59	G.
	ο Virginis	359 . 35	4 . 34,0	32,3	33,8	37,2	34,1	31,3					357 . 39 . 33,58	G.
	δ Ursæ Maj. R. M.	140 . 40	4 . 31,3	29,9	31,7	33,2	30,1	27,1	8,797	+ 27,89			140 . 44 . 58,24	G.
	δ Ursæ Majoris	309 . 20	2 . 23,8	21,0	23,1	24,7	21,0	18,6					309 . 22 . 21,93	G.
	(e) ☽ N.L. M.	15 . 10	2 . 34,8	34,0	34,5	36,8	33,8	31,1	9,997	+ 2,71	−1	+ 4,16	15 . 12 . 40,92	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,810	+ 6,77			40,82	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,645	+ 10,37	+1	− 4,20	40,22	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,453	+ 14,49	+2	− 8,45	40,09	G.
	δ Corvi R. M.	67 . 10	2 . 52,1	50,1	50,7	54,7	50,7	48,1	5,720	+ 1 . 32,03			67 . 14 . 22,98	G.
	δ Corvi	22 . 50	2 . 54,0	52,3	52,9	55,9	51,8	49,6					22 . 52 . 52,63	G.
	Piazzi XII. 202	347 . 10	4 . 30,0	26,3	30,4	29,9	28,8	26,0					347 . 14 . 28,37	G.
	Σ 1825. *n*	346 . 20	4 . 43,4	40,0	43,6	44,5	41,1	38,9					346 . 24 . 41,72	G.
	β Ursæ Min. R. M.	157 . 35	3 . 22,9	21,8	22,9	26,1	21,3	20,2	10,989	− 17,80			157 . 38 . 4,58	G.
	β Ursæ Minoris	292 . 25	4 . 17,9	14,4	16,9	18,3	14,0	13,1					292 . 29 . 15,58	G.
May 11	(f) ⊙ N.L. M.	349 . 10	3 . 27,0	25,2	28,0	30,8	23,4	24,8	11,742	− 33,50			349 . 12 . 53,72	G.
	⊙ S.L.	349 . 40	4 . 32,0	31,0	33,0	35,2	34,4	29,2					349 . 44 . 32,27	G.
	Capella R. M.	128 . 40	1 . 21,0	18,4	17,3	22,3	18,3	15,5	11,480	− 28,02			128 . 40 . 50,73	G.
	Capella	321 . 25	1 . 28,1	27,1	26,9	31,1	27,8	23,8					321 . 26 . 27,40	G.
May 13	(g) α Ursæ Maj. R. M.	145 . 25	1 . 31,9	30,6	29,9	34,8	30,3	29,9	10,230	− 1,98			145 . 26 . 29,19	G.
	α Ursæ Majoris	304 . 40	0 . 51,2	49,2	50,1	52,9	50,0	45,7					304 . 40 . 49,82	G.
	ψ Ursæ Maj. R. M.	128 . 10	1 . 42,4	42,0	39,0	46,2	40,9	38,2	9,816	+ 6,65			128 . 11 . 48,03	G.
	ψ Ursæ Majoris	321 . 55	0 . 27,9	27,9	25,8	30,9	29,7	24,3					321 . 55 . 27,73	G.
	δ Leonis R. M.	104 . 15	0 . 60,9	60,2	56,3	65,0	60,1	55,3	15,440	− 1 . 50,57			104 . 14 . 9,01	G.
	δ Leonis	345 . 50	3 . 6,7	6,0	5,5	10,2	8,4	3,2					345 . 53 . 6,53	G.

Runs and Coincidences at the five wires taken May 16, 1h.

(a) Unsteady. (b) Waving.
(c) Cloudy.
(d) Not seen double: no other star in the field.

(e) Good.
(f) Badly defined.
(g) Too near the fixed wire for a good bisection.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
38,01	6 . 22 . 47,98	30,060	60,6	63,0	6,38				44 . 10 . 2,64	+ 7,18	Capella R.
	46,14								0,80		Capella.
37,02	23 . 44 . 18,84				25,10				61 . 31 . 52,22	+ 3,45	β Tauri R.
	15,02								48,40		β Tauri.
	36 . 22 . 25,59	29,850	54,0	54,2	42,48	5,01		15 . 52,60	74 . 26 . 3,94		⊙.
	36 . 54 . 7,59				43,30	5,08			1,49		⊙.
40,33	− 10 . 22 . 48,40	29,780	52,8	47,3	10,70				27 . 24 . 9,18	+ 0,20	α Ursæ Maj. R.
	45,60								11,98		α Ursæ Majoris.
38,91	6 . 51 . 51,13				7,03				44 . 39 . 6,44	− 4,51	ψ Ursæ Maj. R.
	51,09								6,40		ψ Ursæ Majoris.
38,31	30 . 49 . 30,12				34,83				68 . 37 . 13,23	− 11,95	δ Leonis R.
	28,88								11,99		δ Leonis.
	19 . 47 . 56,87				21,02				57 . 35 . 26,17	− 9,09	ξ Ursæ Maj. *np.*
	56 . 39 . 19,97	29,772	51,3	45,2	1 . 28,86				94 . 27 . 57,11	− 20,03	B.A.C. 4006.
41,14	− 39 . 18 . 0,64		50,8	45,6	47,91				− 1 . 31 . 40,27	+ 3,12	Polaris SP. R.
	17 . 56,23								35,86		Polaris SP.
	− 3 . 31 . 43,68	-			3,61				34 . 15 . 20,99	− 8,92	ζ Ursæ Maj. *np.*
	31 . 21 . 4,90	29,762	50,0	44,9	35,71				69 . 8 . 48,89	− 15,55	Σ 1825.
	36 . 36 . 32,92	29,684	60,0	61,4	41,99	5,04		15 . 52,40	74 . 8 . 25,75		⊙.
	36 . 4 . 48,49				41,19	4,97			25,39		⊙.
39,49	− 10 . 22 . 48,31	29,630	54,0	50,8	10,57				27 . 24 . 9,40	+ 0,33	α Ursæ Maj. R.
	47,20								10,51		α Ursæ Majoris.
38,34	6 . 51 . 51,78				6,94				44 . 39 . 7,00	− 4,37	ψ Ursæ Maj. R.
	50,60								5,82		ψ Ursæ Majoris.
39,00	24 . 28 . 17,41	29,610	51,6	48,4	26,36				62 . 15 . 52,05	− 14,78	ε Bootis R. M.
	17,54								52,18		ε Bootis.
	32 . 54 . 52,04	29,604	58,1	58,0					70 . 27 . 20,40		☽.
	52,56				36,75	30 . 51,78		15 . 35,11	20,92		☽.
	52,94								21,30		☽.
	18 . 15 . 39,32	30,100	49,4	45,2	19,56				56 . 3 . 7,16	− 7,36	ν Ursæ Majoris.
39,81	− 2 . 21 . 7,52	30,110	49,2	42,7	2,45				35 . 25 . 58,31	− 3,23	γ Ursæ Maj. R.
	5,76								26 . 0,07		γ Ursæ Majoris.
39,59	42 . 35 . 53,34				54,74				80 . 23 . 56,36	− 15,98	o Virginis R.
	54,65								57,67		o Virginis.
40,09	− 5 . 41 . 19,31				5,94				32 . 5 . 43,03	− 3,44	δ Ursæ Maj. R.
	17,00								45,34		δ Ursæ Majoris.
	60 . 9 . 1,99		48,7	41,8					97 . 22 . 6,15		☽.
	1,89								6,05		☽.
	1,29				1 . 43,68	52 . 17,12		16 . 29,32	5,45		☽.
	1,16								5,32		☽.
	67 . 49 . 15,95				2 . 25,45				105 . 38 . 49,68	− 22,38	δ Corvi R.
	13,70								47,43		δ Corvi.
	32 . 10 . 49,44				37,55				69 . 58 . 35,27	− 13,87	Piazzi XII. 202.
	31 . 21 . 2,79	30,118	45,0	39,3	36,56				69 . 8 . 47,63	− 14,33	Σ 1825. *n.*
40,08	− 22 . 34 . 25,65	30,120	44,6	38,7	24,99				15 . 12 . 17,64	− 8,76	β Ursæ Min. R.
	23,35								19,94		β Ursæ Minoris.
	34 . 9 . 14,79	30,174	51,5	52,1	39,72	4,73		15 . 50,90	72 . 12 . 48,96		⊙.
	34 . 40 . 53,34				40,51	4,80			46,43		⊙.
39,07	6 . 22 . 48,20	30,160	52,0	55,9	6,50				44 . 10 . 2,98	+ 5,92	Capella R. M.
	48,47								3,25		Capella.
39,51	− 10 . 22 . 50,26	29,848	56,2	53,1	10,59				27 . 24 . 7,43	+ 1,42	α Ursæ Maj. R.
	49,11								8,58		α Ursæ Majoris.
37,88	6 . 51 . 50,90				6,96				44 . 39 . 6,14	− 3,25	ψ Ursæ Maj. R.
	48,80								4,04		ψ Ursæ Majoris.
37,77	30 . 49 . 29,92				34,50				68 . 37 . 12,70	− 11,05	δ Leonis R. M.
	27,60								10,38		δ Leonis.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,120, 10ʳ,125, 10ʳ,133, 10ʳ,140, 10ʳ,146 at the five wires. From May 10 = 10ʳ,122, 10ʳ,127, 10ʳ,135, 10ʳ,142, 10ʳ,148.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 2″,6. From May 10 = − 1″,3.

Adopted Zenith Point = 315°. 3′. 38″,93.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
May 13	B.A.C. 4006......	11 . 40	2 . 59,1	59,5	58,6	62,2	59,8	55,3					11 . 42 . 58,95	G.
	(a) ✱ Æ. 12ʰ.13ᵐ.11ˢ.	341 . 20	2 . 21,6	19,0	19,4	22,0	21,0	17,0			+2	+ 0,29	341 . 22 . 20,19	G.
	(a) ✱ Æ.12ʰ.13ᵐ.32ˢ.M.	...	...	...	...	...	...	...	5,254	+1 . 41,75	+2	+ 0,29	341 . 24 . 1,94	G.
	β Ursæ Min. R. M.	157 . 35	3 . 40,6	40,3	40,5	43,8	41,0	37,9	11,782	− 34,33			157 . 38 . 6,20	G.
	β Ursæ Minoris...	292 . 25	4 . 16,2	13,6	14,0	17,1	13,3	11,9					292 . 29 . 14,17	G.
	Σ 1904 *np*.......	1 . 5	3 . 52,1	49,6	52,8	55,5	53,4	49,9					1 . 8 . 52,05	G.
	(b) ✱ Æ. 15ʰ. 7ᵐ. 2ˢ..	14 . 25	4 . 39,0	38,1	39,1	41,8	39,4	35,8					14 . 29 . 38,67	G.
	✱ Æ.15ʰ.8ᵐ.50ˢ.M.	...	...	...	...	...	...	...	4,510	+1 . 57,25			14 . 31 . 35,92	G.
	(c) ☽ S.L. M.........	30 . 10	4 . 38,6	37,0	37,1	39,8	38,0	35,0	8,628	+ 31,25	−1	+ 2,08	30 . 15 . 10,71	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	8,531	+ 33,43			10,81	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	8,450	+ 35,27	+1	− 2,20	10,45	G.
May 16	⊙ S.L. M.........	348 . 30	1 . 35,8	35,5	35,9	40,1	37,8	32,6	12,312	− 45,38			348 . 30 . 50,84	G.
	⊙ N.L.	347 . 55	4 . 10,7	8,6	11,0	13,8	11,5	7,3					347 . 59 . 10,30	G.
May 20	⊙ S.L. M.........	347 . 35	3 . 15,8	14,3	14,8	19,0	16,9	12,8	12,180	− 42,62			347 . 37 . 32,85	G.
	⊙ N.L...........	347 . 5	0 . 54,0	51,8	52,8	57,7	53,9	49,6					347 . 5 . 53,27	G.
	Capella R. M.....	128 . 40	0 . 32,9	32,0	30,0	36,0	32,2	28,7	9,316	+ 17,08			128 . 40 . 49,03	G.
	Capella............	321 . 25	1 . 29,8	27,5	27,8	31,9	29,0	24,9					321 . 26 . 28,42	G.
	Procyon R. M. ...	88 . 25	2 . 34,5	33,2	32,8	38,2	34,1	31,7	5,884	+1 . 28,61			88 . 29 . 2,58	G.
	Procyon..........	1 . 35	3 . 13,7	14,2	14,1	19,0	16,3	10,9					1 . 38 . 14,57	G.
May 22	⊙ S.L. M........	347 . 10	3 . 22,1	23,8	22,6	28,0	26,0	20,7	11,625	− 31,06			347 . 12 . 52,66	G.
	⊙ N.L............	346 . 40	1 . 14,8	16,0	14,8	20,1	16,4	11,9					346 . 41 . 15,62	G.
May 25	(d) η Ursæ Majoris R.	132 . 55	1 . 35,1	38,0	33,9	40,4	36,7	32,3					132 . 56 . 36,00	G.
	(d) η Ursæ Majoris ...	317 . 10	0 . 35,3	36,0	36,0	40,3	37,3	32,9					317 . 10 . 36,27	G.
	η Bootis R. M. ...	102 . 0	1 . 23,5	25,0	22,7	28,1	24,4	19,9	7,139	+1 . 2,41			102 . 2 . 26,28	G.
	η Bootis..........	348 . 0	4 . 48,4	48,9	49,8	51,2	50,4	45,2					348 . 4 . 48,78	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 20,0	20,9	20,8	25,3	21,7	17,4	12,279	− 44,73			169 . 25 . 36,24	G.
	δ Ursæ Minoris...	280 . 40	1 . 47,0	45,9	45,8	49,8	44,0	43,3					280 . 41 . 45,88	G.
May 26	⊙ S.L. M.........	346 . 25	3 . 22,8	21,8	21,2	26,9	24,2	18,7	11,769	− 34,11			346 . 27 . 48,31	G.
	⊙ N.L...........	345 . 55	1 . 12,0	11,0	11,5	16,0	12,1	6,8					345 . 56 . 11,50	G.
May 29	η Bootis R. M. ...	102 . 0	1 . 31,6	31,1	29,8	34,8	29,8	27,7	7,531	+ 54,24			102 . 2 . 24,96	G.
	η Bootis...........	348 . 0	4 . 48,3	47,0	48,2	50,1	47,8	45,0					348 . 4 . 47,48	G.
	Σ 1804. *sp*........	345 . 15	4 . 29,3	26,2	27,7	30,8	28,1	24,9					345 . 19 . 27,60	G.
	π Bootis. *np*.......	350 . 10	0 . 16,3	15,5	17,2	19,8	16,3	12,6					350 . 10 . 16,27	G.
	Σ 1873. *p*.........	358 . 50	3 . 39,7	37,8	40,1	42,0	38,8	35,4					358 . 53 . 38,77	G.
	β Ursæ Min. R. M.	157 . 35	3 . 49,7	48,9	49,0	53,9	48,7	47,0	12,040	− 39,75			157 . 38 . 9,58	G.
	β Ursæ Minoris...	292 . 25	4 . 10,0	6,0	8,6	11,0	5,3	5,1					292 . 29 . 7,45	G.
	Σ 1904. *np*........	1 . 5	3 . 47,8	46,9	48,9	51,4	48,0	45,5			+3	+ 0,15	1 . 8 . 48,03	G
	(e) ✱ Æ. 15ʰ. 7ᵐ. 2ˢ....	14 . 25	4 . 44,2	44,2	44,9	48,2	43,8	40,7					14 . 29 . 44,08	G.
	✱ Æ.15ʰ. 8ᵐ. 50ˢ.M.	...	...	...	...	...	...	...	4,882	+1 . 49,45			14 . 31 . 33,53	G.
	Σ 1952. *nf*........	357 . 0	3 . 52,8	51,3	54,0	56,4	53,2	49,1					357 . 3 . 52,60	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 30,9	30,7	31,9	37,4	30,8	29,0	12,787	− 55,32			169 . 25 . 36,38	G.
	δ Ursæ Minoris ...	280 . 40	1 . 47,8	44,3	46,2	48,8	42,7	42,8					280 . 41 . 45,33	G.
	α Lyræ R. M.	121 . 25	3 . 19,4	17,8	19,4	22,8	16,0	14,7	6,972	+1 . 5,88			121 . 29 . 24,05	G.
	α Lyræ............	328 . 35	2 . 55,0	53,0	54,5	57,7	51,3	49,7					328 . 37 . 53,38	G.
June 1	Piazzi XIII. 163 ..	338 . 20	4 . 28,3	27,3	28,8	32,0	29,8	26,0			+3	+ 0,75	338 . 24 . 29,22	G.
	Σ 1783............	325 . 25	1 . 44,8	43,0	42,9	47,8	44,8	40,0			+2	+ 0,54	325 . 26 . 44,34	G.
	Σ 1785. *np*.	339 . 30	0 . 10,4	9,9	8,6	14,1	11,0	5,7					339 . 30 . 9,93	G.
	α Draconis R. M. .	147 . 55	3 . 33,8	35,0	33,2	38,7	34,0	32,0	11,088	− 19,90			147 . 58 . 14,37	G.
	α Draconis	302 . 5	4 . 6,1	5,1	5,9	8,7	4,8	1,1					302 . 9 . 5,07	G.
	γ Bootis R. M. ...	121 . 45	4 . 31,1	30,3	29,0	34,7	29,0	27,2	6,512	+1 . 15,48			121 . 50 . 45,46	G.
	γ Bootis..........	328 . 15	1 . 31,2	31,0	29,2	35,1	32,1	27,8					328 . 16 . 30,98	G.
	(f) Σ 1858. *n*.........	330 . 55	4 . 46,3	45,5	45,8	49,7	46,4	43,1					330 . 59 . 45,88	G.
	π Bootis. *np*......	350 . 10	0 . 17,0	17,0	17,0	21,7	18,3	12,5					350 . 10 . 17,23	G.

Coincidence at the middle wire taken May 30, 23ʰ.
Runs taken May 30, 23ʰ.

(*a*) These stars are equally bright and of about the 7th magnitude. (*b*) Magnitude 8.9. (*c*) The Limb waved excessively and was much fringed with color. (*d*) On the fixed wire: not well bisected. (*e*) Very faint. (*f*) The components are very close.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	56 . 39 . 20,02		54,8	51,2	1 . 27,99				94 . 27 . 56,29	− 19,77	B.A.C. 4006.
	26 . 18 . 41,26		54,0	50,4	28,75				64 . 6 . 18,29	− 11,34	∗ Æ. 12^h.13^m.11^s.
	26 . 20 . 23,01				28,78				64 . 8 . 0,07	− 11,35	∗ Æ. 12^h.13^m.32^s.
40,19	− 22 . 34 . 27,27	29,844	51,3	46,6	24,36				15 . 12 . 16,65	− 7,82	β Ursæ Min. R.
	24,76								19,16		β Ursæ Minoris.
	46 . 5 . 13,12				1 . 0,78				83 . 53 . 22,18	− 14,77	Σ 1904. *np.*
	59 . 25 . 59,74			45,4	1 . 39,13				97 . 14 . 47,15	− 15,09	∗ Æ. 15^h. 7^m. 2^s.
	59 . 27 . 56,99				1 . 39,25				97 . 16 . 44,52	− 14,99	∗ Æ. 15^h. 8^m. 50^s.
	75 . 11 . 31,78								111 . 47 . 39,93		☽
	31,88				3 . 38,59	58 . 11,90		16 . 26,82	40,03		☽.
	31,52								39,67		☽.
	33 . 27 . 11,91	29,384	56,1	57,8	37,24	4,64		15 . 49,90	70 . 59 . 2,89		⊙.
	32 . 55 . 31,37				36,50	4,58			1,47		⊙.
	32 . 33 . 53,92	29,822	54,3	56,0	36,67	4,53		15 . 49,10	70 . 5 . 45,24		⊙.
	32 . 2 . 14,34				35,93	4,46			43,19		⊙.
38,73	6 . 22 . 49,90				6,42				44 . 10 . 4,60	+ 4,66	Capella R.
	49,49								4,19		Capella.
38,58	46 . 34 . 36,35	29,798	55,7	55,7	1 . 0,60				84 . 22 . 45,23	− 7,97	Procyon R.
	35,64								44,52		Procyon.
	32 . 9 . 13,73	29,648	58,0	60,4	35,57	4,48		15 . 48,70	69 . 41 . 4,40		⊙.
	31 . 37 . 36,69				34,85	4,41			4,11		⊙.
36,14	2 . 7 . 2,69	29,640	57,3	50,0	2,14				39 . 54 . 13,11	− 5,47	η Ursæ Maj. R.
	6 . 57,58								8,00		η Ursæ Majoris.
37,53	33 . 1 . 12,41				37,54				70 . 48 . 58,23	− 12,22	η Bootis R.
	10,09								55,91		η Bootis.
41,05	− 34 . 21 . 57,55	29,634	51,8	45,7	39,84				3 . 24 . 30,89	− 9,03	δ Ursæ Min. R.
	52,81								35,63		δ Ursæ Minoris.
	31 . 24 . 9,62	29,628	59,9	60,2	34,53	4,38		15 . 48,10	68 . 55 . 59,95		⊙.
	30 . 52 . 32,81				33,82	4,31			58,70		⊙.
36,22	33 . 1 . 13,73	29,980	53,0	45,0	38,36				70 . 49 . 0,37	− 11,62	η Bootis R.
	8,79								48 . 55,43		η Bootis.
	30 . 15 . 48,91				34,45				68 . 3 . 31,64	− 10,88	Σ 1804. *sp.*
	35 . 6 . 37,58		50,8	44,2	41,57				72 . 54 . 27,43	− 11,54	π Bootis. *np.*
	43 . 50 . 0,08				56,73				81 . 38 . 5,09	− 13,09	Σ 1873. *p.*
38,52	− 22 . 34 . 30,89				24,59				15 . 12 . 12,80	− 3,02	β Ursæ Min. R.
	31,24								12,45		β Ursæ Minoris.
	46 . 5 . 9,34	29,984	50,3	44,2	1 . 1,37				83 . 53 . 18,99	− 12,86	Σ 1904. *np.*
	59 . 26 . 5,39				1 . 39,84				97 . 14 . 53,51	− 14,28	∗ Æ. 15^h. 7^m. 2^s.
	59 . 27 . 54,84				1 . 39,96				97 . 16 . 43,08	− 14,19	∗ Æ. 15^h. 8^m. 50^s.
	42 . 0 . 13,91				53,23				79 . 48 . 15,42	− 11,31	Σ 1952. *nf.*
40,86	− 34 . 21 . 57,69	29,992	46,4	38,1	40,96				3 . 24 . 29,63	− 7,83	δ Ursæ Min. R.
	53,36								33,96		δ Ursæ Minoris.
38,72	13 . 34 . 14,64				14,47				51 . 21 . 37,39	− 6,54	α Lyræ R.
	14,69								37,44		α Lyræ.
	23 . 20 . 50,53	29,492	58,7	57,4	24,45				61 . 8 . 23,26	− 8,74	Piazzi XIII. 163.
	10 . 23 . 5,65				10,38				48 . 10 . 24,31	− 5,67	Σ 1783.
	24 . 26 . 31,24				25,74				62 . 14 . 5,26	− 9,02	Σ 1785. *np.*
39,72	− 12 . 54 . 35,68				12,99				24 . 52 . 19,61	+ 1,73	α Draconis R.
	33,62								21,67		α Draconis.
38,22	13 . 12 . 53,23	29,484	58,3	56,8	13,28				51 . 0 . 14,79	− 6,73	γ Bootis R.
	52,29								13,85		γ Bootis.
	15 . 56 . 7,19				16,19				53 . 43 . 31,66	− 7,27	Σ 1858. *n.*
	35 . 6 . 38,54				39,84				72 . 54 . 26,66	− 11,05	π Bootis. *np.*

Coincidence of Micrometer Wire with fixed Wire = 10^r,122, 10^r,127, 10^r,135, 10^r,142, 10^r,148 at the five wires. From May 25 = 10^r,120, 10^r,125, 10^r,133, 10^r,140, 10^r,146.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 1″,3. From May 26 = − 1″,6.

Adopted Zenith Point = 315°. 3′. 38″,93. From May 25 = 315°. 3′. 38″,69.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
June 3	(a) ⊙ N.L. M.	344 . 40	3 . 25,8	25,1	25,3	31,0	27,8	22,2	9,360	+ 16,11			344 . 43 . 42,13	G.
	⊙ S.L.	345 . 15	0 . 13,1	12,0	11,5	16,8	14,8	16,9					345 . 15 . 14,17	G.
	ε Virginis	355 . 25	2 . 37,8	37,1	37,9	42,0	39,4	35,0					355 . 27 . 38,07	G.
	α Comæ Berenices.	348 . 50	4 . 20,3	18,0	20,4	22,8	19,7	16,0			+2	+ 0,21	348 . 54 . 19,51	G.
	ζ Ursæ Majoris. *np.*	311 . 30	1 . 48,2	46,0	46,0	50,0	46,1	42,8					311 . 31 . 46,42	G.
	⁎ Æ. $13^h.22^m.41^s$.	14 . 15	3 . 16,0	16,7	14,8	19,0	15,6	10,9					14 . 18 . 15,33	G.
	⁎ Æ. $13^h.26^m.5^s$.	15 . 0	3 . 45,1	45,0	45,5	48,8	45,6	42,0					15 . 3 . 45,13	G.
	m Virginis	15 . 5	4 . 37,5	38,1	38,8	42,0	38,8	35,9					15 . 9 . 38,27	G.
	(b) ⁎ Æ. $13^h.36^m.22^s$.	15 . 45	2 . 42,0	42,9	42,7	46,0	42,8	38,2					15 . 47 . 42,28	G.
	⁎ Æ. $13^h.38^m.56^s$.	16 . 10	0 . 17,0	17,1	15,8	20,3	16,9	12,4					16 . 10 . 16,57	G.
	Σ 1882. *s.*	305 . 30	0 . 52,9	50,0	52,2	54,8	50,8	47,2					305 . 30 . 51,27	G.
	β Ursæ Min. R. M.	157 . 35	3 . 36,5	34,0	35,1	39,2	34,3	33,8	11,191	− 22,05			157 . 38 . 13,25	G.
	β Ursæ Minoris	292 . 25	4 . 9,1	5,7	8,4	10,5	6,0	4,0					292 . 29 . 7,07	G.
	Σ 1896. *sf.*	322 . 35	0 . 52,1	49,1	50,9	54,8	51,1	46,6			+2	+ 0,59	322 . 35 . 51,31	G.
	(c) ε Ursæ Minoris R.	165 . 5	2 . 18,2	17,5	19,0	21,4	17,6	16,0					165 . 7 . 18,17	G.
	(d) ε Ursæ Minoris	284 . 55	4 . 61,1	61,4	60,2	65,6	59,3	56,9					285 . 0 . 0,75	G.
June 5	(e) ☽ N.L. M.	6 . 55	4 . 58,8	57,8	58,5	62,8	60,0	53,8	8,800	+ 27,61	−1	+ 4,10	7 . 0 . 30,33	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,582	+ 32,32			30,94	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,397	+ 36,32	+1	− 4,10	30,84	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,227	+ 40,00	+2	− 8,20	30,42	G.
	⁎ Æ. $13^h.22^m.41^s$.	14 . 15	3 . 14,2	14,0	13,9	17,9	14,3	10,4					14 . 18 . 13,95	G.
	⁎ Æ. $13^h.26^m.5^s$.	15 . 0	3 . 44,5	44,0	45,5	47,9	44,3	40,5					15 . 3 . 44,25	G.
	m Virginis	15 . 5	4 . 37,0	36,0	38,2	40,2	37,4	34,0					15 . 9 . 36,88	G.
	⁎ Æ. $13^h.38^m.56^s$.	16 . 10	0 . 16,4	16,2	16,5	19,7	16,0	12,4					16 . 10 . 16,18	G.
	Σ 1783.	325 . 25	1 . 43,2	39,4	41,5	43,4	40,9	38,1			+4	+ 2,16	325 . 26 . 43,16	G.
	η Bootis R. M.	102 . 0	1 . 39,2	39,1	37,9	43,0	37,9	34,8	7,784	+ 48,96			102 . 2 . 27,53	G.
	η Bootis	348 . 0	4 . 48,0	45,0	48,8	49,0	46,4	43,8					348 . 4 . 46,58	G.
	Σ 1804. *sp.*	345 . 15	4 . 28,7	26,1	27,8	31,4	28,0	25,4					345 . 19 . 27,67	G.
	(f) γ Bootis R. M.	121 . 50	0 . 44,7	44,2	43,7	48,8	43,1	40,3	10,050	+ 1,73			121 . 50 . 45,83	G.
	γ Bootis	328 . 15	1 . 31,1	29,1	30,0	33,3	29,9	26,8					328 . 16 . 29,95	G.
	Σ 1858. *sp.*	330 . 55	4 . 47,9	45,1	48,1	50,4	46,6	44,0					330 . 59 . 46,77	G.
	Σ 1873. *np.*	358 . 50	3 . 39,0	36,9	40,2	42,0	38,3	34,6					358 . 53 . 38,30	G.
	β Ursæ Min. R. M.	157 . 35	3 . 48,8	48,0	49,8	52,8	47,9	45,9	11,890	− 36,62			157 . 38 . 12,05	G.
	β Ursæ Minoris	292 . 25	4 . 7,7	5,0	7,8	9,7	4,7	3,8					292 . 29 . 6,23	G.
	Σ 1896. *sf.*	322 . 35	0 . 49,9	46,9	49,0	52,9	48,8	44,4			+4	+ 2,38	322 . 35 . 50,98	G.
	Mars N.L.	32 . 25	1 . 59,0	58,9	58,8	62,7	57,7	55,2					32 . 26 . 58,62	G.
June 6	β Leonis R. M.	98 . 15	3 . 21,9	19,9	20,9	25,9	19,9	17,1	10,320	− 3,90			98 . 18 . 16,85	G.
	β Leonis	351 . 45	3 . 60,3	56,5	60,2	62,7	58,8	54,6					351 . 48 . 58,63	G.
	γ Ursæ Maj. R. M.	137 . 20	4 . 9,7	8,0	9,0	13,0	9,5	6,0	8,212	+ 40,04			137 . 24 . 49,02	G.
	γ Ursæ Majoris	312 . 40	2 . 31,8	27,0	28,0	32,1	27,8	24,4					312 . 42 . 28,38	G.
	(g) ☽ N.L. M.	13 . 0	2 . 39,9	38,0	39,8	42,9	39,5	35,3	9,567	+ 11,52	−2	+ 8,12	13 . 2 . 58,74	G.
	☽ N.L. M.	...	..	...	...	...	...	...	9,370	+ 15,73	−1	+ 4,08	58,91	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,193	+ 19,59			58,69	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,004	+ 23,68	+1	− 4,10	58,68	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,837	+ 27,28	+2	− 8,24	58,14	G.
	η Virginis R. M.	83 . 0	3 . 21,2	17,6	18,9	24,9	18,1	15,7	7,877	+ 47,03			83 . 4 . 6,25	G.
	η Virginis	7 . 0	3 . 11,0	9,4	10,9	14,1	11,2	7,1					7 . 3 . 10,45	G.
	ε Virginis	355 . 25	2 . 36,3	36,5	37,5	41,9	37,7	34,0					355 . 27 . 37,18	G.
	α^1 Libræ R. M.	67 . 30	1 . 19,9	19,9	19,8	24,5	18,8	17,2	7,032	+ 1 . 4,47	−1	+ 0,04	67 . 32 . 24,46	G.
	α^1 Libræ	22 . 30	4 . 51,6	51,1	52,8	55,3	51,5	49,4			+2	− 0,16	22 . 34 . 51,52	G.
	α^2 Libræ R. M.	67 . 30	1 . 19,9	19,9	19,8	24,5	18,8	17,2	14,747	− 1 . 19,95	−1	+ 0,04	67 . 29 . 43,64	G.
	α^2 Libræ M.	22 . 30	4 . 51,6	51,1	52,8	55,3	51,5	49,4	2,421	+ 2 . 41,15	+3	− 0,37	22 . 37 . 32,46	G.
June 8	⊙ S.L. M.	344 . 40	3 . 26,3	25,4	25,9	30,5	28,0	22,4	13,054	− 1 . 0,89			344 . 42 . 25,24	G.
	⊙ N.L.	344 . 10	0 . 53,0	50,2	52,4	57,0	53,8	47,9					344 . 10 . 52,32	G.
June 9	(c) ⊙ N.L.	344 . 5	0 . 31,6	28,8	29,1	35,6	32,8	27,2					344 . 5 . 30,80	G.
	⊙ S.L.	344 . 35	1 . 61,7	59,1	61,0	65,9	62,3	56,7					344 . 37 . 0,95	G.

Runs taken June 15, 23^h.

(*a*) Good. (*b*) Faint. (*c*) Accidentally on the fixed wire. (*d*) No correction for Runs. (*e*) No correction for Runs. The micrometer readings have all been diminished by 1^r. (*f*) Too near the fixed wire for a satisfactory bisection. (*g*) Very good observation.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	29 . 40 . 3,44	29,402	60,0	64,0	31,74	4,15		15 . 46,90	67 . 43 . 26,21		☉.
	30 . 11 . 35,48				32,42	4,22			25,06		☉.
	40 . 23 . 59,38	29,500	57,7	55,0	48,42				78 . 11 . 56,08	– 13,39	ε Virginis.
	33 . 50 . 40,82				38,16				71 . 38 . 27,26	– 11,34	α Comæ Beren.
	– 3 . 31 . 52,27				3,51				34 . 15 . 12,50	– 1,92	ζ Ursæ Maj. *np.*
	59 . 14 . 36,64			54,2	1 . 35,51				97 . 3 . 20,43	– 18,49	⁎Æ.13ʰ.22ᵐ.41ˢ.
	60 . 0 . 6,44				1 . 38,44				97 . 48 . 53,16	– 18,60	⁎Æ.13ʰ.26ᵐ.5ˢ.
	60 . 5 . 59,58			53,3	1 . 39,01				97 . 54 . 46,87	– 18,40	*m* Virginis.
	60 . 44 . 3,59				1 . 41,58				98 . 32 . 53,45	– 18,47	⁎Æ.13ʰ.36ᵐ.22ˢ.
	61 . 6 . 37,88				1 . 43,14				98 . 55 . 29,30	– 18,47	⁎Æ.13ʰ.38ᵐ.56ˢ.
	– 9 . 32 . 47,42				9,61				28 . 14 . 11,25	– 2,80	Σ 1882. *s.*
40,16	– 22 . 34 . 34,56	29,510	54,7	50,4	23,90				15 . 12 . 9,82	– 1,69	β Ursæ Min. R.
	31,62								12,76		β Ursæ Minoris.
	7 . 32 . 12,62				7,61				45 . 19 . 28,51	– 5,50	Σ 1896. *sf.*
39,46	– 30 . 3 . 39,48	29,536	53,0	48,0	33,46				7 . 42 . 55,34	– 4,79	ε Ursæ Min. R.
	37,94								56,88		ε Ursæ Minoris.
	51 . 56 . 51,64	29,750	56,4	56,2					89 . 15 . 0,42		☽.
	52,25								1,03		☽.
	52,15				1 . 13,04	46 . 18,22		16 . 5,68	0,93		☽.
	51,73								0,51		☽.
	59 . 14 . 35,26		54,0	50,4	1 . 37,06				97 . 3 . 20,60	– 18,41	⁎Æ.13ʰ.22ᵐ.41ˢ.
	60 . 0 . 5,56				1 . 40,04				97 . 48 . 53,88	– 18,51	⁎Æ.13ʰ.26ᵐ.5ˢ.
	60 . 5 . 58,19				1 . 40,43				97 . 54 . 46,90	– 18,31	*m* Virginis.
	61 . 6 . 37,49				1 . 44,63				98 . 55 . 30,40	– 18,40	⁎Æ.13ʰ.38ᵐ.56ˢ.
	10 . 23 . 4,47				10,62				48 . 10 . 23,37	– 4,93	Σ 1783.
37,06	33 . 1 . 11,16				37,65				70 . 48 . 57,49	– 10,62	η Bootis R.
	7,89								53,82		η Bootis.
	30 . 15 . 48,98			49,3	33,88				68 . 3 . 31,14	– 9,76	Σ 1804. *sp.*
37,89	13 . 12 . 52,86			48,1	13,67				51 . 0 . 14,81	– 5,84	γ Bootis R.
	51,26								13,21		γ Bootis.
	15 . 56 . 8,08				16,63				53 . 43 . 32,99	– 6,43	Σ 1858. *sp.*
	43 . 49 . 59,61				55,85				81 . 38 . 3,74	– 12,21	Σ 1873. *np.*
39,14	– 22 . 34 . 33,36				24,21				15 . 12 . 10,71	– 1,19	β Ursæ Min. R.
	32,46								11,61		β Ursæ Minoris.
	7 . 32 . 12,29				7,71				45 . 19 . 28,28	– 5,01	Σ 1896. *sf.*
	77 . 23 . 19,93		52,0	46,0	4 . 15,60	17,85	9,170	10,04	115 . 14 . 36,00		Mars.
37,74	36 . 45 . 21,84	29,800	55,0	52,3	43,17				74 . 33 . 13,29	– 11,79	β Leonis R.
	19,94								11,39		β Leonis.
38,70	– 2 . 21 . 10,33				2,38				35 . 25 . 55,57	– 0,13	γ Ursæ Maj. R.
	10,31								55,59		γ Ursæ Majoris.
	57 . 59 . 20,05								95 . 13 . 59,00		☽.
	20,22								59,17		☽.
	20,00				1 . 32,23	50 . 13,88		16 . 12,32	58,95		☽.
	19,99								58,94		☽.
	19,45								58,40		☽.
38,35	51 . 59 . 32,44	29,808	54,8	51,3	1 . 14,03				89 . 47 . 54,75	– 17,12	η Virginis R.
	31,76								54,07		η Virginis.
	40 . 23 . 58,49		54,0	49,8	49,44				78 . 11 . 56,21	– 13,07	ε Virginis.
37,99	67 . 31 . 14,23		52,0	46,8	2 . 20,42				105 . 20 . 42,93	– 16,81	α¹ Libræ R.
	12,83								41,53		α¹ Libræ.
38,05	67 . 33 . 55,05				2 . 20,72				105 . 23 . 24,05	– 16,77	α² Libræ R.
	53,77								22,77		α² Libræ.
	29 . 38 . 46,55	29,306	58,9	60,0	31,86	4,15		15 . 46,40	67 . 10 . 36,14		☉.
	29 . 7 . 13,63				31,19	4,08			35,42		☉.
	29 . 1 . 52,11	29,322	56,8	60,3	31,07	4,07		15 . 46,30	67 . 5 . 13,69		☉.
	29 . 33 . 22,26				31,74	4,14			11,84		☉.

Coincidence of Micrometer Wire with fixed wire = $10^r,120$, $10^r,125$, $10^r,133$, $10^r,140$, $10^r,146$ at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = – 1″,6. From June 8 = – 2″,5.
Adopted Zenith Point = 315°. 3′. 38″,69.
Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
June 10	ι^1 Libræ	26 . 25	0 . 28,9	30,7	26,9	32,6	28,6	26,2					26 . 25 . 28,95	G.
	β Libræ R. M.	74 . 5	0 . 44,5	44,5	43,3	49,3	43,2	41,7	14,188	− 1 . 24,52			74 . 4 . 19,85	G.
	β Libræ	16 . 0	2 . 55,0	56,0	54,4	58,9	54,8	51,5					16 . 2 . 54,87	G.
	(a) Σ 1934. *sp.*	322 . 50	4 . 5,5	3,8	4,8	7,9	4,8	0,8					322 . 54 . 4,27	G.
	(a) Σ 1935. *sf.*	335 . 55	5 . 10,6	8,0	10,9	12,9	9,5	6,1					336 . 0 . 9,23	G.
	✻ Æ. 15h. 18m. 59s.	1 . 25	3 . 10,0	9,2	10,2	13,9	10,0	6,1					1 . 28 . 9,63	G.
	Σ 1943. *np.* M.	...	...	...	...	...	...	...	32,462	− 7 . 45,44			1 . 20 . 24,19	G.
	α Cor. Bor. R. M.	110 . 5	1 . 22,9	21,6	19,8	25,5	20,2	17,4	11,381	− 25,62	+3	− 0,70	110 . 5 . 54,80	G.
	α Coronæ Borealis.	340 . 0	1 . 18,3	16,6	17,0	21,3	17,8	14,2			+4	+ 1,23	340 . 1 . 18,65	G.
	κ Libræ	26 . 20	3 . 44,8	45,9	44,7	49,0	45,2	42,8					26 . 23 . 45,08	G.
	γ Coronæ	340 . 25	3 . 20,2	17,3	18,2	22,2	18,2	16,1					340 . 28 . 18,43	G.
	β Serpentis	351 . 20	0 . 51,9	50,1	52,5	55,7	51,8	47,2					351 . 20 . 51,47	G.
	(b) ☽ S.L. M.	31 . 30	1 . 8,4	10,1	7,5	12,9	7,3	5,1	7,150	+ 1 . 1,91	−2	+ 2,63	31 . 32 . 12,99	G.
	☽ S.L. M.	...	...	...	...	...	...	...	7,041	+ 1 . 4,28	−1	+ 1,38	14,11	G.
	☽ N.L.	30 . 55	4 . 41,0	41,1	40,8	44,7	39,9	39,1					30 . 59 . 40,72	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,059	+ 1,69	+1	− 1,52	40,89	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,952	+ 4,04	+2	− 3,17	41,59	G.
	Antares	33 . 15	1 . 46,0	46,1	45,0	50,0	44,9	43,5					33 . 16 . 45,77	G.
	τ Scorpii	35 . 0	4 . 20,1	19,7	20,0	23,0	18,4	17,8			+2	− 0,32	35 . 4 . 19,15	G.
June 14	Aldebaran R. M.	99 . 0	1 . 32,9	31,1	30,1	36,5	30,9	27,6	6,500	+ 1 . 15,61			99 . 2 . 46,99	G.
	Aldebaran	351 . 0	4 . 26,1	25,0	25,5	29,9	27,5	23,2					351 . 4 . 25,83	G.
	Capella R. M.	128 . 40	1 . 35,0	32,2	31,7	38,0	32,4	30,8	12,529	− 50,07			128 . 40 . 43,15	G.
	Capella	321 . 25	1 . 31,8	31,9	28,7	36,3	32,9	28,7					321 . 26 . 31,58	G.
	(c) β Tauri R. M.	111 . 15	3 . 29,2	27,9	25,9	34,2	25,9	26,0	7,741	+ 49,84	+1	− 0,08	111 . 19 . 17,66	G.
	(c) β Tauri	338 . 45	2 . 57,4	57,0	56,6	62,2	57,4	53,9			+2	+ 0,32	338 . 47 . 57,49	G.
June 15	☉ N.L. M.	343 . 40	1 . 20,1	21,0	18,9	26,9	22,5	17,7	9,000	+ 23,49			343 . 41 . 44,56	G.
	☉ S.L.	344 . 10	3 . 14,0	13,7	13,0	19,4	15,6	10,2					344 . 13 . 14,05	G.
	Castor R. M.	115 . 0	4 . 18,8	18,0	16,0	23,9	17,2	16,9	9,191	+ 19,61	+1	− 0,09	115 . 4 . 37,62	G.
	Castor	335 . 0	2 . 35,0	34,0	31,4	39,1	35,8	31,6			+2	+ 0,38	335 . 2 . 34,65	G.
	(d) Σ 1878	305 . 20	0 . 43,1	41,1	41,0	46,8	40,7	40,4					305 . 20 . 42,13	G.
	Σ 1822. *s.*	305 . 30	0 . 50,8	47,8	48,5	53,8	47,5	47,4					305 . 30 . 49,23	G.
	Σ 1886. *nf.*	356 . 50	3 . 26,0	26,0	25,9	30,1	25,5	25,3					356 . 53 . 26,18	G.
	β Ursæ Min. R. M.	157 . 35	3 . 38,6	39,2	37,8	43,1	39,1	36,8	11,429	− 27,13			157 . 38 . 11,67	G
	β Ursæ Minoris	292 . 25	4 . 4,0	3,1	2,1	7,4	1,7	1,9					292 . 29 . 3,03	G.
	τ Herculis R. M.	129 . 30	1 . 21,5	21,7	21,0	26,0	21,4	18,3	7,550	+ 53,72			129 . 32 . 15,25	G.
	τ Herculis	320 . 30	4 . 62,7	61,8	62,0	64,5	60,7	59,4					320 . 35 . 1,43	G.
	η Draconis R. M.	144 . 40	3 . 34,4	35,0	33,5	39,8	35,1	33,7	12,151	− 42,19			144 . 42 . 52,76	G.
	η Draconis	305 . 20	4 . 26,9	24,4	25,2	29,0	24,4	23,6					305 . 24 . 25,22	G.
	τ Scorpii	35 . 0	4 . 19,6	19,2	18,0	23,2	17,9	18,3					35 . 4 . 19,00	G.
	Mars N.L.	32 . 30	3 . 8,6	9,4	7,8	14,0	8,0	7,0					32 . 33 . 8,87	G.
	✻Æ.16h.42m.39s.M.	...	...	...	...	...	...	...	13,450	− 1 . 9,26			32 . 31 . 59,61	G.
	(e) Capella R. M.	128 . 40	1 . 35,2	34,1	32,0	39,0	34,9	30,5	12,540	− 50,30			128 . 40 . 43,85	G.
	(e) Capella	321 . 25	1 . 33,7	33,1	30,2	37,6	32,0	30,2					321 . 26 . 32,67	G.
June 16	(f) ☉ S.L. M.	344 . 10	1 . 34,9	34,9	33,9	40,4	37,0	31,9	12,570	− 50,92			344 . 10 . 44,45	G.
	(f) ☉ N.L.	343 . 35	4 . 12,6	14,0	12,8	18,7	15,1	10,2					343 . 39 . 13,55	G.
	Procyon R. M.	88 . 25	3 . 52,2	52,1	49,9	58,3	51,9	50,7	9,759	+ 7,67			88 . 28 . 59,87	G.
	Procyon	1 . 35	3 . 13,0	14,9	12,4	19,3	16,1	11,0					1 . 38 . 14,18	G.
	Pollux R. M.	111 . 10	4 . 26,4	25,2	23,3	30,2	24,8	22,9	8,102	+ 42,21			111 . 15 . 7,31	G.
	Pollux	338 . 50	2 . 5,8	6,2	5,4	11,1	7,8	2,4					338 . 52 . 6,27	G.
	Σ 1934. *sp.*	322 . 50	4 . 6,3	4,2	3,2	8,7	4,3	2,1					322 . 54 . 4,47	G.
	Σ 1942. *p.*	345 . 15	0 . 12,6	11,1	9,2	16,1	11,7	8,1					345 . 15 . 11,45	G.
June 17	☉ N.L. M.	343 . 35	2 . 21,9	22,2	20,1	27,6	23,6	18,6	10,865	− 15,39			343 . 37 . 6,74	G.
	☉ S.L.	344 . 5	3 . 35,1	34,0	33,9	39,7	36,4	31,5					344 . 8 . 34,80	G.
	(g) Procyon R. M.	88 . 25	3 . 35,5	34,8	31,5	40,9	33,9	32,8	8,803	+ 27,59			88 . 29 . 2,19	G.
	(g) Procyon M.	1 . 35	2 . 44,0	45,6	43,1	50,8	46,4	41,9	8,803	+ 27,59			1 . 38 . 12,66	G.
	Pollux R. M.	111 . 10	4 . 35,8	34,0	32,7	39,7	33,9	31,9	8,510	+ 33,71			111 . 15 . 7,99	G.
	Pollux	338 . 50	2 . 6,8	6,8	6,3	12,4	8,9	3,4					338 . 52 . 7,25	G.

Coincidences at the five wires taken June 15, 23h.

(a) Faint.
(b) Clouds passing, and Limbs badly defined. No correction required for defect of illumination, the Limbs being equally full.

(c) Faint and unsteady.
(d) No star near this.
(e) Unsteady.
(f) Bad definition.
(g) Both on the micrometer wire.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	71 . 21 . 50,26	29,872	55,0	50,9	2 . 50,61				109 . 11 . 49,15	− 16,09	ι[1] Libræ.
37,36	60 . 59 . 18,84				1 . 44,43				98 . 48 . 11,55	− 13,77	β Libræ R.
	. 16,18								8,89		β Libræ.
	7 . 50 . 25,58				8,01				45 . 37 . 41,87	− 3,93	Σ 1934. *sp.*
	20 . 56 . 30,54				22,25				58 . 44 . 1,07	− 6,07	Σ 1935. *sf.*
	46 . 24 . 30,94				1 . 0,99				84 . 12 . 40,21	− 10,52	⁎Æ.15ʰ.18ᵐ.59ˢ.
	46 . 16 . 45,50				1 . 0,71				84 . 4 . 54,49	− 10,46	Σ 1943. *np.*
36,73	24 . 57 . 43,89	29,876	54,1	50,6	27,08				62 . 45 . 19,25	− 6,54	α Coronæ Bor. R.
	39,96								15,32		α Coronæ Bor.
	71 . 20 . 6,39				2 . 50,47				109 . 10 . 5,14	− 13,83	κ Libræ.
	25 . 24 . 39,74				27,64				63 . 12 . 15,66	− 6,45	γ Coronæ.
	36 . 17 . 12,78				42,69				74 . 5 . 3,75	− 8,06	β Serpentis.
	76 . 28 . 34,30			49,8	3 . 57,55	57 . 50,17		16 . 15,11	113 . 5 . 34,85		☽.
	35,42								35,97		☽.
	75 . 56 . 2,03								113 . 5 . 32,04		☽.
	2,20				3 . 48,38	57 . 41,76		16 . 15,11	32,21		☽.
	2,90								32,91		☽.
	78 . 13 . 7,08	29,882	53,3	49,7	4 . 32,40				116 . 4 . 47,76	− 10,29	Antares.
	80 . 0 . 40,46				5 . 19,51				117 . 53 . 8,25	− 9,89	τ Scorpii.
36,41	36 . 0 . 51,70	30,024	64,0	64,2	41,33				73 . 48 . 41,31	+ 3,78	Aldebaran R.
	47,14								36,75		Aldebaran.
37,37	6 . 22 . 55,54	30,016	63,3	65,0	6,35				44 . 10 . 10,17	+ 1,14	Capella R.
	52,89								7,52		Capella.
37,58	23 . 44 . 21,03				24,97				61 . 31 . 54,28	+ 1,39	β Tauri R.
	18,80								52,05		β Tauri.
	28 . 38 . 5,87	30,012	62,7	64,4	31,03	4,01		15 . 45,70	66 . 41 . 26,87		☉.
	29 . 9 . 35,36				31,71	4,08			25,57		☉.
36,14	19 . 59 . 1,07		62,4	64,5	20,67				57 . 46 . 30,02	− 1,50	Castor R.
	19 . 58 . 55,96								24,91		Castor.
	− 9 . 42 . 56,56	29,970	55,4	50,0	10,00				28 . 4 . 1,72	+ 0,08	Σ 1878.
	− 9 . 32 . 49,46				9,83				28 . 14 . 8,99	+ 0,06	Σ 1822. *s.*
	41 . 49 . 47,49				52,25				79 . 37 . 48,02	− 10,27	Σ 1886. *nf.*
37,35	− 22 . 34 . 32,98				24,29				15 . 12 . 11,01	+ 1,16	β Ursæ Min. R.
	35,66								8,33		β Ursæ Minoris.
38,34	5 . 31 . 23,44	29,996	53,2	47,1	5,68				43 . 18 . 37,40	− 2,31	τ Herculis R.
	22,74								36,70		τ Herculis.
38,99	− 9 . 39 . 14,07				10,00				28 . 7 . 44,21	− 1,24	η Draconis R.
	. 13,47								44,81		η Draconis.
	80 . 0 . 40,31			46,8	5 . 22,39				117 . 53 . 10,98	− 10,09	τ Scorpii.
	77 . 29 . 30,18				4 . 19,11	18,11	9,091	10,80	115 . 20 . 50,26		Mars.
	77 . 28 . 20,92				4 . 18,72				115 . 19 . 47,92	− 8,11	⁎Æ.16ʰ.42ᵐ.39ˢ.
38,26	6 . 22 . 54,84	29,950	63,0	65,8	6,33				44 . 10 . 9,45	+ 1,02	Capella R.
	53,98								8,59		Capella.
	29 . 7 . 5,76	29,950	63,0	66,9	31,43	4,08		15 . 45,70	66 . 38 . 55,69		☉.
	28 . 35 . 34,86				30,75	4,01			55,58		☉.
37,03	46 . 34 . 38,82	29,946	64,4	68,2	59,40				84 . 22 . 46,50	− 6,41	Procyon R.
	35,49								43,17		Procyon.
36,79	23 . 48 . 31,38				24,83				61 . 36 . 4,49	− 2,41	Pollux R.
	27,58								0,69		Pollux.
	7 . 50 . 25,78	29,956	58,0	53,0	7,99				45 . 37 . 42,05	− 2,49	Σ 1934. *sp.*
	30 . 11 . 32,76				33,76				67 . 59 . 14,80	− 6,47	Σ 1942. *p.*
	28 . 33 . 28,05	30,002	60,0	63,7	30,96	4,00		15 . 45,60	66 . 36 . 48,89		☉.
	29 . 4 . 56,11				31,64	4,07			46,36		☉.
37,43	46 . 34 . 36,50	30,000	62,1	64,0	1 . 0,00				84 . 22 . 44,78	− 6,34	Procyon R.
	33,97								42,25		Procyon.
37,62	23 . 48 . 30,70				25,08				61 . 36 . 4,06	− 2,46	Pollux R.
	28,56								1,92		Pollux.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,120, 10ʳ,125, 10ʳ,133, 10ʳ,140, 10ʳ,146 at the five wires. From June 14 = 10ʳ,119, 10ʳ,121, 10ʳ,127, 10ʳ,132, 10ʳ,136.
One Micrometer Revolution = 20″,844.
Correction for Runs = − 2″,5.
Adopted Zenith Point = 315°. 3′. 38″,69.
Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
June 17	(a) Σ 1878............	305 . 20	0 . 43,2	40,8	40,0	46,8	40,2	38,8					305 . 20 . 41,58	G.
	(a) Σ 1886.	356 . 50	3 . 25,4	25,1	25,3	30,1	25,2	23,9					356 . 53 . 25,55	G.
June 20	τ Scorpii.........	35 . 0	4 . 19,4	19,2	17,9	23,6	16,8	17,2					35 . 4 . 18,85	G.
	Mars S.L..........	32 . 30	3 . 13,4	14,1	12,0	18,3	12,0	11,9					32 . 33 . 13,48	G.
	52 Herculis R. M.	129 . 5	1 . 24,4	23,3	23,3	28,7	22,7	21,8	9,928	+ 4,27			129 . 6 . 28,25	G.
	52 Herculis	321 . 0	0 . 51,1	48,0	49,7	53,1	47,9	46,2					321 . 0 . 49,30	G.
	κ Ophiuchi R. M..	92 . 25	3 . 21,4	19,0	19,5	24,7	17,4	17,9	8,031	+ 43,81			92 . 29 . 3,66	G.
	κ Ophiuchi........	357 . 35	3 . 13,2	11,6	13,2	17,8	11,8	10,5					357 . 38 . 12,88	G.
	h Draconis R. M. .	148 . 10	3 . 16,8	15,3	16,0	19,9	14,9	13,1	10,651	− 10,80			148 . 15 . 5,07	G.
	h Draconis........	301 . 50	4 . 15,4	12,3	14,5	15,9	10,9	10,1					301 . 54 . 13,02	G.
	ε Ursæ Min. R. M.	165 . 5	3 . 21,8	21,1	21,8	25,0	21,3	20,7	13,020	− 1 . 0,19			165 . 7 . 21,63	G.
	ε Ursæ Minoris...	284 . 55	4 . 60,2	57,8	59,4	62,2	56,8	56,1					284 . 59 . 58,55	G.
	α Herculis R. M. .	97 . 20	4 . 44,8	42,4	43,7	48,7	41,7	41,2	6,687	+ 1 . 11,83			97 . 25 . 55,40	G.
	α Herculis........	352 . 40	1 . 21,1	19,0	19,1	24,6	19,1	18,6					352 . 41 . 20,20	G.
	☽ N.L. M.	357 . 0	0 . 50,7	47,8	50,8	55,1	50,0	47,2	10,991	− 18,06	−2	− 6,21	357 . 0 . 25,96	G.
	(b) ☽ N.L. M.........	...	...	...	...	...	...	...	11,160	− 21,53	−1	− 3,13	25,57	G.
	☽ N.L. M.	...	...	...	...	...	...	...	11,318	− 24,69			25,54	G.
	Capella R. M......	128 . 40	1 . 38,3	36,3	34,8	41,9	35,2	34,8	12,644	− 52,34			128 . 40 . 44,48	G.
	Capella............	321 . 25	1 . 32,9	32,0	29,8	36,7	32,9	28,1					321 . 26 . 32,00	G.
June 21	☉ N.L. M.	343 . 30	2 . 29,9	31,9	28,9	36,9	32,4	27,0	9,371	+ 15,88			343 . 32 . 46,95	G.
	☉ S.L..............	344 . 0	4 . 13,0	13,4	13,1	18,9	15,5	9,5					344 . 4 . 13,73	G.
June 22	(c) ☉ S.L. M.........	344 . 0	4 . 18,5	19,3	18,5	24,0	20,4	16,3	10,450	− 6,61			344 . 4 . 12,72	G.
	(c) ☉ N.L.	343 . 30	2 . 42,0	40,9	41,0	46,8	43,1	38,9					343 . 32 . 42,02	G.
	τ Scorpii..........	35 . 0	4 . 20,1	19,4	18,0	23,9	16,9	18,5					35 . 4 . 19,30	G.
	Mars S.L..........	32 . 30	2 . 46,1	46,9	42,8	51,4	43,8	44,5					32 . 32 . 45,80	G.
	(d) 52 Herculis R.	129 . 5	1 . 29,4	28,0	27,8	33,6	27,9	26,9					129 . 6 . 28,87	G.
	52 Herculis	321 . 0	0 . 49,3	49,1	47,0	53,9	47,1	45,0					321 . 0 . 48,53	G.
	κ Ophiuchi R. M..	92 . 25	3 . 33,9	32,1	30,8	36,3	30,2	30,2	8,693	+ 30,01			92 . 29 . 2,13	G.
	κ Ophiuchi........	357 . 35	3 . 12,9	12,5	11,5	17,9	11,9	10,7					357 . 38 . 12,77	G.
	γ Androm. R. M. .	124 . 20	4 . 13,0	11,1	11,1	15,3	9,9	7,0	6,637	+ 1 . 12,88			124 . 25 . 23,95	G.
	γ Andromedæ	325 . 40	1 . 55,6	52,1	52,8	57,5	52,6	49,0					325 . 41 . 53,20	G.
	α Arietis R. M....	105 . 30	3 . 27,5	24,3	24,9	29,7	23,5	21,8	7,090	+ 1 . 3,42			105 . 34 . 28,57	G.
	α Arietis..........	344 . 30	2 . 48,2	44,7	46,2	51,5	46,9	44,3			+1	+ 0,06	344 . 32 . 46,91	G.
	(e) ☽ N.L. M.........	348 . 50	2 . 32,4	30,3	30,5	35,5	30,8	28,2	11,265	− 23,75	−2	− 4,64	348 . 52 . 2,79	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	11,327	− 25,01	−1	− 2,37	3,80	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	11,433	− 27,09			4,09	G.
	(f) α Persei R. M. ...	132 . 5	3 . 31,2	30,2	29,7	34,6	29,4	27,6	9,762	+ 7,73			132 . 8 . 38,05	G.
	α Persei...........	317 . 55	3 . 40,8	37,3	38,8	42,4	38,0	35,8					317 . 58 . 38,70	G.
June 26	(g) β[1] Scorpii R. M...	63 . 30	1 . 33,5	34,8	31,3	30,8	32,3	35,1	11,452	− 27,89	−1	+ 0 05	63 . 31 . 4,89	C.
	(h) β[1] Scorpii.........	26 . 35	0 . 55,4	56,6	53,5	52,6	54,5	56,0			+2	− 0,21	26 . 35 . 54,42	C.
	Mars S.L..........	32 . 30	1 . 18,3	20,0	17,0	16,5	17,1	20,6					32 . 31 . 18,07	C.
	⁎ Æ. 16h. 45m. 24s.	3 . 55	3 . 10,0	10,5	9,3	7,0	10,0	11,0					3 . 58 . 9,17	C.
June 27	☉ N.L. M.	343 . 35	5 . 6,8	6,0	6,1	2,7	6,6	7,3	14,517	− 1 . 31,38	+1	+ 0,05	343 . 38 . 33,84	C.
	☉ S.L..............	344 . 5	5 . 3,5	1,8	3,4	1,6	3,2	3,7			+2	+ 0,20	344 . 10 . 2,33	C.
June 28	☉ N.L.............	343 . 40	0 . 60,5	59,3	59,5	56,0	60,1	58,8					343 . 40 . 58,88	C.
	β Ursæ Min. R. M.	157 . 35	4 . 40,8	37,4	38,5	34,8	37,4	41,2	14,306	− 1 . 26,94	+1½	− 1,25	157 . 38 . 9,48	C.
	β Ursæ Minoris...	292 . 25	3 . 55,3	50,8	52,3	48,0	49,8	53,6			+2¼	+ 2,80	292 . 28 . 53,87	C.
	(i) β[1] Scorpii R. M...	63 . 30	3 . 54,9	53,5	53,6	48,7	51,6	54,4	18,090	− 2 . 45,86	+1	+ 0,05	63 . 31 . 6,41	C.
	(k) β[1] Scorpii.	26 . 35	0 . 55,7	53,8	53,4	50,1	52,0	55,5			+4½	− 1,07	26 . 35 . 52,21	C.
	(l) σ Scorpii.........	32 . 20	4 . 55,7	53,5	54,3	51,3	52,7	56,0			+1	− 0,07	32 . 24 . 53,85	C.
	Mars S.L.	32 . 25	0 . 33,7	32,1	31,6	29,2	30,6	34,4			+2	− 0,27	32 . 25 . 31,60	C.
July 6	(m) β Libræ R. M. ...	74 . 0	4 . 28,4	26,0	24,6	22,3	24,2	28,5	10,781	− 13,65			74 . 4 . 11,27	C.
	β Libræ..........	16 . 0	2 . 51,6	51,0	48,3	47,6	50,5	51,2			+3	− 0,21	16 . 2 . 49,34	C.
	Capella R. M......	128 . 40	0 . 54,2	50,5	49,3	47,3	48,2	51,5	10,809	− 14,54	−2	− 0,62	128 . 40 . 34,87	C.
	Capella...........	321 . 25	1 . 29,2	27,0	26,4	21,6	25,5	27,2			+1	+ 0,16	321 . 26 . 26,08	C.

Runs and Coincidence at the middle wire taken June 22, 11h.
June 23, 0h. The Circle was taken from the wall and its axis was cleaned, after which I adjusted the axis to horizontality by the plumb line and ghost apparatus.
June 26, 0h. The Meridian Error of the Circle Telescope was corrected, the Collimation Error having previously been found to be very small.
June 26, 8h. The microscopes were adjusted, and the Runs and Coincidence at the middle wire taken.

(a) Not seen double. (b) Very faint. (c) Without the dark glass: not quite satisfactory. (d) Accidentally on the fixed wire. (e) Exceedingly faint. (f) Faint and unsteady. (g) Pretty good. (h) Not satisfactory. (i) Mercury waving and bisection doubtful. (k) Not good. (l) No correction for Runs. (m) From this date the reading for Free Thermometer is taken from a Thermometer out of doors near the North opening of the Circle Room.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	− 9 . 42 . 57,11	29,970	58,0	53,0	9,94				28 . 4 . 1,23	+ 0,51	Σ 1878.
	41 . 49 . 46,86				51,94				79 . 37 . 47,08	− 10,03	Σ 1886.
	80 . 0 . 40,16	30,132	54,3	46,4	5 . 24,45				117 . 53 . 12,89	− 10,27	τ Scorpii.
	77 . 29 . 34,79				4 . 20,79	18,00	11,160	10,71	115 . 20 . 35,15		Mars.
38,78	5 . 57 . 10,44				6,17				43 . 44 . 24,89	− 0,79	52 Herculis R.
	10,61								25,06		52 Herculis.
38,27	42 . 34 . 35,03				54,32				80 . 22 . 37,63	− 4,04	κ Ophiuchi R.
	34,19								36,79		κ Ophiuchi.
39,05	− 13 . 9 . 26,38				13,83				24 . 37 . 28,07	+ 0,31	*h* Draconis R.
	25,67								28,78		*h* Draconis.
40,09	− 30 . 3 . 42,94	30,128	53,0	45,6	34,30				7 . 42 . 51,04	+ 0,65	ε Ursæ Min. R.
	40,14								53,84		ε Ursæ Minoris.
37,80	37 . 37 . 43,29				45,66				75 . 25 . 37,23	− 2,76	α Herculis R.
	41,51								35,45		α Herculis.
	41 . 56 . 47,27	30,064	51,6	50,8					79 . 23 . 32,07		☽.
	46,88				52,54	36 . 2,39		14 . 46,37	31,68		☽.
	46,85								31,65		☽.
38,24	6 . 22 . 54,21	30,040	59,4	60,0	6,42				44 . 10 . 8,91	+ 0,42	Capella R.
	53,31								8,01		Capella.
	28 . 29 . 8,26	30,036	60,8	61,3	31,05	3,99		15 . 45,30	66 . 32 . 28,90		⊙.
	29 . 0 . 35,04				31,73	4,06			25,69		⊙.
	29 . 0 . 34,03	29,974	61,5	65,1	31,43	4,06		15 . 45,30	66 . 32 . 24,38		⊙.
	28 . 29 . 3,33				30,75	3,99			23,67		⊙.
	80 . 0 . 40,61	30,020	56,0	50,0	5 . 20,79				117 . 53 . 9,68	− 10,34	τ Scorpii.
	77 . 29 . 7,11				4 . 17,72	17,92	11,105	10,13	115 . 20 . 5,06		Mars.
38,70	5 . 57 . 9,82				6,10				43 . 44 . 24,20	− 0,21	52 Herculis R.
	9,84								24,22		52 Herculis.
37,45	42 . 34 . 36,56				53,72				80 . 22 . 38,56	− 3,69	κ Ophiuchi R.
	34,08								36,08		κ Ophiuchi.
38,58	10 . 38 . 14,74	30,024	57,7	56,8	10,84				48 . 25 . 33,86	+ 2,49	γ Androm. R.
	14,51								33,63		γ Andromedæ.
37,74	29 . 29 . 10,12				32,63				67 . 16 . 51,03	+ 7,52	α Arietis R.
	8,22								49,13		α Arietis.
	33 . 48 . 24,10		57,8	57,0					71 . 20 . 53,21		☽.
	25,11				38,63	30 . 10,44		14 . 52,64	54,22		☽.
	25,40								54,51		☽.
38,38	2 . 55 . 0,64		58,2	58,5	2,93				40 . 42 . 11,85	+ 0,47	α Persei R.
	0,01								11,22		α Persei.
29,66	71 . 32 . 26,05	29,848	57,4	52,2	2 . 51,73				109 . 22 . 26,06	− 11,80	β¹ Scorpii R.
	23,48								23,49		β¹ Scorpii.
	77 . 27 . 47,13		56,5	51,3	4 . 15,11	17,68	11,163	10,81	115 . 18 . 42,03		Mars.
	48 . 54 . 38,23			51,1	1 . 6,49				86 . 42 . 53,00	− 4,20	∗ Æ. $16^h.45^m.24^s$.
	28 . 35 . 2,90	29,742	58,4	59,9	30,96	4,00		15 . 45,10	66 . 38 . 23,24		⊙.
	29 . 6 . 31,39				31,64	4,07			22,14		⊙.
	28 . 37 . 27,94	29,588	55,7	55,6	31,12	4,01		15 . 45,10	66 . 40 . 48,43		⊙.
31,68	− 22 . 34 . 38,54	29,656	55,2	48,7	24,10				15 . 12 . 5,64	+ 3,62	β Ursæ Min. R.
	37,07								7,11		β Ursæ Minoris.
29,31	71 . 32 . 24,53		52,0	45,3	2 . 53,09				109 . 22 . 25,90	− 11,78	β¹ Scorpii R.
	21,27								22,64		β¹ Scorpii.
	77 . 21 . 22,91				4 . 14,52				115 . 12 . 45,71	− 11,52	σ Scorpii.
	77 . 22 . 0,66		51,4	44,8	4 . 15,00		11,145	10,51	115 . 12 . 55,89		Mars.
30,30	60 . 59 . 19,67	29,798	63,5	61,6	1 . 41,94				98 . 48 . 9,89	− 12,31	β Libræ R.
	18,40								8,62		β Libræ.
30,48	6 . 22 . 56,07	29,880	62,2	64,1	6,33				44 . 10 . 10,68	− 1,22	Capella R.
	55,14								9,75		Capella.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,119, 10ʳ,121, 10ʳ,127, 10ʳ,132, 10ʳ,136 at the five wires. From June 20 = 10ʳ,125, 10ʳ,127, 10ʳ,133, 10ʳ,138, 10ʳ,142. From June 26 = 10ʳ,112, 10ʳ,114, 10ʳ,126, 10ʳ,133, 10ʳ,137.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 2″,5. From June 20 = − 1″,2. From June 26 = − 4″,4. From July 6 = − 5″,1.

Adopted Zenith Point = 315°. 3′. 38″,69. From June 26 = 315°. 3′. 30″,94.

Assumed Colatitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
July 6	Mars S.L.	32 . 25	3 . 37,7	35,8	35,2	31,7	34,6	37,7			+2	− 0,28	32 . 28 . 34,55	C.
	✱ Æ. 16h. 45m. 24s.	3 . 55	3 . 9,2	6,6	8,5	3,0	6,5	7,5					3 . 58 . 6,35	C.
	Σ 2178	332 . 10	2 . 8,2	3,4	5,8	1,2	3,5	4,6					332 . 12 . 4,10	C.
July 8	(a) ☉ S.L. M.	345 . 0	0 . 63,0	60,0	61,5	57,8	62,5	60,3	16,085	−2 . 4,21			344 . 58 . 56,47	C.
	(a) ☉ N.L.	344 . 25	2 . 29,9	26,1	28,1	24,5	28,3	28,6					344 . 27 . 27,17	C.
	(b) θ Draconis R. M.	141 . 50	0 . 31,4	28,2	29,0	26,2	28,6	30,6	12,082	− 40,77			141 . 49 . 48,15	C.
	(b) θ Draconis	308 . 15	2 . 17,2	14,0	15,5	10,5	12,3	13,5			+1	+ 0,25	308 . 17 . 13,72	C.
	(c) ☽ N.L. M.	31 . 50	1 . 33,6	31,6	30,4	27,9	30,8	32,8	12,000	− 39,06			31 . 50 . 51,87	C.
	☽ N.L. M.	...	...	...	...	...	...	...	11,932	− 37,50	+1	− 0,74	52,69	C.
	☽ N.L. M.	...	...	...	...	...	...	...	12,017	− 39,19	+2	− 1,62	50,12	C.
July 11	(d) Capella R. M.	128 . 40	0 . 64,0	59,7	60,5	57,6	58,0	60,5	11,330	− 25,09			128 . 40 . 34,78	C.
	Capella	321 . 25	1 . 29,0	25,5	26,4	21,6	24,9	26,6			+2	+ 0,62	321 . 26 . 26,02	C.
July 14	(e) *h* Draconis R. M.	148 . 15	0 . 56,0	53,6	53,5	50,6	53,1	54,0	18,213	−2 . 48,21	+1	− 0,33	148 . 13 . 4,76	C.
	h Draconis	301 . 50	3 . 59,9	58,2	57,5	53,1	56,8	56,5			+2	+ 1,31	301 . 53 . 57,59	C.
	Σ 2178. *np.*	332 . 10	2 . 5,6	3,0	3,7	1,3	3,2	2,9			+1	+ 0,11	332 . 12 . 3,01	C.
July 15	☉ S.L. M.	345 . 55	1 . 37,6	36,5	35,6	34,1	37,3	36,7	15,454	−1 . 50,85			345 . 54 . 45,15	C.
	☉ N.L.	345 . 20	3 . 15,6	15,8	14,1	12,1	15,6	15,3					345 . 23 . 14,17	C.
	θ Draconis R. M.	141 . 50	0 . 34,2	32,0	31,6	28,5	33,2	33,3	12,192	− 43,11	−1	− 0,25	141 . 49 . 48,67	C.
	θ Draconis	308 . 15	2 . 14,6	13,0	11,4	8,8	11,3	11,8			+1	+ 0,25	308 . 17 . 11,67	C.
	(*f*) Mars S.L.	32 . 30	0 . 58,5	59,3	55,6	55,8	57,5	59,4			+4¾	− 1,64	32 . 30 . 55,88	C.
	21 Ophiuchi	5 . 45	0 . 56,5	56,5	55,2	52,0	56,3	55,4					5 . 45 . 55,15	C.
	(g) ξ Ophiuchi R. M.	61 . 55	4 . 41,0	41,5	37,3	38,4	39,6	41,9	16,695	−2 . 16,71			61 . 57 . 23,29	C.
	(g) ξ Ophiuchi	28 . 5	4 . 39,6	39,0	36,5	35,4	38,4	38,9			+3	− 0,52	28 . 9 . 37,50	C.
July 16	(h) Capella R. M.	128 . 40	1 . 25,3	22,1	20,1	19,5	20,0	23,8	12,421	− 47,45	+1½	− 0,35	128 . 40 . 33,75	C.
	(h) Capella	321 . 25	1 . 28,0	26,6	24,2	21,5	24,6	25,0			+3	− 1,39	321 . 26 . 26,12	C.
July 17	☉ N.L. M.	345 . 40	3 . 36,8	35,5	34,2	32,5	38,3	35,7	13,049	−1 . 0,72			345 . 42 . 34,13	C.
	☉ S.L.	346 . 10	3 . 62,4	62,0	61,2	58,7	63,0	61,1					346 . 14 . 0,67	C.
	Mars N.L.	32 . 30	1 . 59,1	59,6	56,3	55,4	58,4	59,7			+3	− 0,66	32 . 31 . 57,06	C.
	(i) Σ 2120	338 . 55	2 . 14,8	10,9	12,2	8,6	11,9	13,5			+1	+ 0,08	338 . 57 . 11,66	C.
	(k) ✱Æ. 16h. 59m. 16s. M.	...	...	...	...	...	...	...	9,248	+ 18,52			338 . 57 . 30,10	C.
	(l) Σ 2213	336 . 0	3 . 54,5	50,5	50,3	46,2	50,0	51,0					336 . 3 . 49,72	C.
	ξ Draconis R. M.	139 . 40	5 . 8,0	6,4	5,2	2,5	5,4	8,1	11,316	− 24,59			139 . 44 . 40,41	C.
	ξ Draconis	310 . 20	2 . 24,5	19,7	20,9	16,7	20,0	22,1			+2	+ 0,93	310 . 22 . 21,15	C.
July 19	τ Herculis R. M.	129 . 30	1 . 28,0	26,4	24,5	22,4	21,0	26,2	7,659	+ 51,87	+2	− 0,64	129 . 32 . 15,73	G.
	τ Herculis	320 . 30	4 . 49,1	46,9	48,2	40,8	43,9	46,7			+3	+ 1,43	320 . 34 . 46,48	G.
	Mars N.L.	32 . 30	3 . 38,7	39,4	36,9	33,4	34,5	39,2					32 . 33 . 36,35	G.
	ξ Draconis R. M.	139 . 45	1 . 29,8	26,9	26,0	23,3	22,7	27,1	15,100	−1 . 43,47			139 . 44 . 42,23	G.
	ξ Draconis	310 . 20	2 . 28,0	22,3	25,3	18,5	20,7	23,3					310 . 22 . 22,58	G.
	70 Ophiuchi R. M.	85 . 20	3 . 34,0	32,8	31,1	28,8	28,4	33,0	7,647	+ 51,89			85 . 24 . 22,59	G.
	70 Ophiuchi	4 . 40	2 . 43,5	40,9	41,8	37,0	39,0	41,4					4 . 42 . 40,12	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 21,0	18,4	19,1	15,1	16,1	19,2	11,648	− 31,51			169 . 25 . 46,41	G.
	δ Ursæ Minoris	280 . 40	1 . 23,1	18,9	20,1	15,7	15,6	20,6					280 . 41 . 18,77	G.
	β Arietis	347 . 10	3 . 19,9	15,6	18,5	11,8	14,5	16,2					347 . 13 . 15,48	G.
	☽ N.L. M.	350 . 20	3 . 21,6	16,5	20,9	13,9	15,5	17,2	10,948	− 17,23	−2	− 5,04	350 . 22 . 54,73	G.
	☽ N.L. M.	...	...	...	...	...	...	...	11,052	− 19,35	−1	− 2,57	55,08	G.
	☽ N.L. M.	...	...	...	...	...	...	...	11,197	− 22,11			54,89	G.
	☽ N.L. M.	...	...	...	...	...	...	...	11,310	− 24,32	+1	+ 2,65	55,33	G.
	☽ N.L. M.	...	...	...	...	...	...	...	11,473	− 27,64	+2	+ 5,40	54,76	G.
	Capella R. M.	128 . 40	1 . 32,1	28,9	28,9	23,1	25,1	27,1	12,661	− 52,63			128 . 40 . 34,64	G.
	Capella	321 . 25	1 . 33,0	29,7	29,9	24,0	27,2	27,7			+2	+ 0,62	321 . 26 . 28,94	G.
July 20	(m) ☉ S.L. M.	346 . 45	1 . 29,9	29,0	27,1	24,0	26,1	27,2	12,097	− 40,87			346 . 45 . 46,08	G.
	(m) ☉ N.L.	346 . 10	4 . 19,0	15,9	17,9	13,0	15,7	15,6					346 . 14 . 15,40	G.

July 15, 9h, the fixed horizontal wire was ascertained to be in accurate adjustment.
Runs taken July 15, 9¾h. Coincidences at the five wires taken July 19, 23h.

(*a*) Very badly defined Limbs. (*b*) Good. (*c*) Very rough; the Limb was however fully illumined. All the three bisections were uncertain. (*d*) Unsteady. (*e*) For Microscope F the following division was bisected by mistake. The Run of this microscope, viz. +1,8, has therefore been subtracted from the reading set down. (*f*) Time of bisection delayed by a cloud. (*g*) Good. Small negative correction for Runs. (*h*) Very unsteady. (*i*) Observed as single. (*k*) A star of 8.9 Mag. (*l*) Appeared double. (*m*) Cloudy.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
	77 . 25 . 3,61	29,894	60,0	56,0	4 . 12,10	16,73	11,116	10,21	115 . 15 . 57,05		Mars.
	48 . 54 . 35,41	29,896	59,6	55,5	1 . 6,00				86 . 42 . 49,69	− 2,73	∗Æ.16h.45m.24s.
	17 . 8 . 33,16	29,898	59,0	55,6	17,78				54 . 55 . 59,22	+ 3,65	Σ 2178.
	29 . 55 . 25,53	29,848	61,8	66,6	32,39	4,18		15 . 45,10	67 . 27 . 16,92		⊙.
	29 . 23 . 56,23				31,70	4,11			17,20		⊙.
30,94	− 6 . 46 . 17,21	29,852	60,4	55,5	6,83				31 . 0 . 44,24	+ 4,72	θ Draconis R.
	17,22								44,23		θ Draconis.
	76 . 47 . 20,93	29,856	59,7	54,7					113 . 57 . 28,05		☽.
	21,75				4 . 0,53	57 . 1,99	16,030		28,87		☽.
	19,18								26,32		☽.
30,40	6 . 22 . 56,16	30,140	58,5	62,5	6,41				44 . 10 . 10,85	− 1,65	Capella R.
	55,08								9,77		Capella.
31,18	− 13 . 9 . 33,82	30,042	62,0	59,0	13,45				24 . 37 . 21,01	+ 7,21	*h* Draconis R.
	33,35								21,48		*h* Draconis.
	17 . 8 . 32,07	30,034	61,8	58,4	17,76				54 . 55 . 58,11	+ 5,40	Σ 2178. *np.*
	30 . 51 . 14,21	30,014	64,1	71,4	33,48	4,30		15 . 45,40	68 . 23 . 6,27		⊙.
	30 . 19 . 43,23				32,79	4,23			5,47		⊙.
30,17	− 6 . 46 . 17,73	30,066	65,0	63,7	6,77				31 . 0 . 43,78	+ 6,10	θ Draconis R.
	19,27								42,24		θ Draconis.
	77 . 27 . 24,94		64,4	63,2	4 . 10,59	15,88	11,091	9,84	115 . 18 . 18,09		Mars.
	50 . 42 . 24,21	30,070	64,2	62,4	1 . 9,75				88 . 30 . 42,24	− 2,37	21 Ophiuchi.
30,40	73 . 6 . 7,65	30,072	63,9	61,0	3 . 6,33				110 . 56 . 22,26	− 4,77	ξ Ophiuchi R.
	6,56								21,17		ξ Ophiuchi.
29,94	6 . 22 . 57,19	30,200	65,5	71,4	6,31				44 . 10 . 11,78	− 2,00	Capella R.
	55,18								9,77		Capella.
	30 . 39 . 3,19	30,192	70,9	76,2	33,10	4,27		15 . 45,50	68 . 42 . 25,80		⊙.
	31 . 10 . 29,73				33,79	4,34			21,96		⊙.
	77 . 28 . 26,12	30,108	67,5	64,8	4 . 10,46	15,65	9,206	9,85	115 . 19 . 39,06		Mars.
	23 . 53 . 40,72	30,106	66,4	62,0	25,38				61 . 41 . 14,38	+ 3,72	Σ 2120.
	23 . 53 . 59,16								61 . 41 . 32,82	+ 3,75	∗Æ.16h.59m.16s.
	21 . 0 . 18,78	30,098	65,4	60,7	22,05				58 . 47 . 49,11	+ 6,22	Σ 2213.
30,78	− 4 . 41 . 9,47				4,71				33 . 5 . 54,10	+ 8,36	ξ Draconis R.
	9,79								53,78		ξ Draconis.
31,10	5 . 31 . 15,21	29,650	59,2	53,0	5,55				43 . 18 . 29,04	+ 5,80	τ Herculis R.
	15,54								29,37		τ Herculis.
	77 . 30 . 5,41				4 . 13,26	15,43	9,236	9,38	115 . 21 . 20,90		Mars.
32,41	− 4 . 41 . 11,29	29,658	58,4	52,9	4,71				33 . 5 . 52,28	+ 8,92	ξ Draconis R.
	8,36								55,21		ξ Draconis.
31,36	49 . 39 . 8,35				1 . 7,56				87 . 27 . 24,19	− 2,55	70 Ophiuchi R.
	9,18								25,02		70 Ophiuchi.
32,59	− 34 . 22 . 15,47		57,3	51,5	39,41				3 . 24 . 13,40	+ 8,57	δ Ursæ Min. R.
	12,17								16,70		δ Ursæ Minoris.
	32 . 9 . 44,54	29,684	57,8	49,4	36,42				69 . 57 . 29,24	+ 12,88	β Arietis.
	35 . 19 . 23,79		56,4	49,7					72 . 50 . 47,75		☽.
	24,14								48,10		☽.
	23,95				41,02	31 . 14,56		14 . 49,22	47,91		☽.
	24,39								48,35		☽.
	23,82								47,78		☽.
31,79	6 . 22 . 56,30	29,700	58,1	57,3	6,38				44 . 10 . 10,96	− 2,21	Capella R.
	58,00								12,66		Capella.
	31 . 42 . 15,14	29,700	62,0	61,8	34,92	4,41		15 . 45,70	69 . 14 . 8,23		⊙.
	31 . 10 . 44,46				34,20	4,34			8,30		⊙.

Coincidence of Micrometer Wire with fixed Wire = 10r,112, 10r,114, 10r,126, 10r,133, 10r,137 at the five wires. From July 14 = 10r,122, 10r,124, 10r,136, 10r,143, 10r,147.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 5″,1. From July 11 = − 5″,5.

Adopted Zenith Point = 315°. 3′. 30″,94.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
July 21	τ Herculis R. M.	129 . 30	1 . 24,9	22,6	22,0	20,1	19,7	23,1	7,482	+ 55,32			129 . 32 . 17,14	G.
	τ Herculis	320 . 30	4 . 48,8	45,2	48,1	40,9	44,0	46,1					320 . 34 . 44,63	G.
	Mars N.L.	32 . 35	0 . 38,9	37,1	35,9	33,8	35,0	37,8			+2	– 0,31	32 . 35 . 35,99	G.
	g Draconis R. M.	147 . 40	3 . 28,0	26,1	27,3	23,0	23,6	27,5	8,939	+ 24,95			147 . 43 . 50,23	G.
	g Draconis	302 . 20	3 . 17,8	13,6	16,4	10,5	11,1	13,8					302 . 23 . 13,27	G.
	52 Herculis R. M.	129 . 5	2 . 22,6	20,1	19,9	17,3	17,0	21,1	12,617	– 51,72			129 . 6 . 27,51	G.
	52 Herculis	321 . 0	0 . 36,9	32,9	34,4	28,9	31,1	33,5					321 . 0 . 32,85	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 33,0	30,3	30,8	27,9	29,4	31,7	12,237	– 43,79			169 . 25 . 46,44	G.
	δ Ursæ Minoris	280 . 40	1 . 22,3	17,5	19,1	14,4	15,1	19,1					280 . 41 . 17,68	G.
	Juno	8 . 35	2 . 25,1	22,6	24,5	19,7	19,8	23,4					8 . 37 . 22,08	G.
July 24	θ Cygni R. M.	132 . 40	1 . 33,9	33,9	32,0	29,2	31,3	32,3	7,320	+ 58,71			132 . 42 . 30,68	G.
	θ Cygni	317 . 20	4 . 35,5	32,9	34,6	26,8	30,9	33,4					317 . 24 . 31,95	G.
	γ Aquilæ R. M.	93 . 0	4 . 34,1	33,6	32,8	28,9	29,7	32,5	6,310	+ 1 . 19,76			93 . 5 . 51,31	G.
	γ Aquilæ	357 . 0	1 . 12,3	12,3	13,0	7,9	10,8	12,1					357 . 1 . 11,30	G.
	α^1 Capricorni R. M.	69 . 45	3 . 41,9	40,5	40,0	34,1	37,8	40,0	85,625	+ 5 . 2,19	–2	+ 0,14	69 . 53 . 41,06	G.
	α^1 Capricorni	20 . 10	3 . 23,9	23,4	22,5	18,1	20,0	22,9			+2	– 0,14	20 . 13 . 21,36	G.
	α^2 Capricorni R. M.	69 . 45	3 . 41,9	40,5	40,0	34,1	37,8	40,0	2,127	+ 2 . 46,65	–2	+ 0,14	69 . 51 . 25,52	G.
	α^2 Capricorni M.	20 . 10	3 . 23,9	23,4	22,5	18,1	20,0	22,9	3,630	+ 2 . 15,84	+2	– 0,14	20 . 15 . 37,20	G.
	Juno	8 . 50	0 . 10,5	10,4	10,5	5,7	6,9	8,7					8 . 50 . 8,77	G.
July 27	☉ N.L. M.	347 . 40	0 . 24,1	24,2	22,9	19,2	24,9	22,9	10,570	– 9,05			347 . 40 . 13,95	G.
	☉ S.L.	348 . 10	1 . 45,4	44,5	43,9	39,2	41,1	42,7					348 . 11 . 43,15	G.
July 28	(a) ☉ S.L. M.	348 . 25	1 . 34,8	34,9	32,9	29,5	33,9	33,0	13,504	– 1 . 10,20			348 . 25 . 22,83	G.
	☉ N.L.	347 . 50	3 . 51,9	51,2	50,9	44,9	50,9	48,4					347 . 53 . 49,37	G.
July 31	δ Cygni R. M.	127 . 35	0 . 31,5	29,4	27,4	25,2	26,0	28,4	8,378	+ 36,64			127 . 36 . 4,57	G.
	δ Cygni	322 . 30	0 . 60,9	58,3	58,2	54,7	56,5	57,1					322 . 30 . 57,53	G.
Aug. 1	(b) Polaris SP. R. M.	174 . 20	2 . 23,0	22,0	20,1	17,2	20,9	21,4	12,328	– 45,69		+ 0,12	174 . 21 . 35,00	G.
	Polaris	275 . 45	0 . 32,3	30,8	28,0	24,4	28,4	28,7				– 0,20	275 . 45 . 28,52	G.
	(a) ☽ N.L. M.	20 . 45	4 . 20,3	21,4	17,5	15,2	19,8	18,9	10,602	– 9,72			20 . 49 . 8,76	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,328	– 3,83	+1	– 3,70	10,95	G.
	(c) ☽ N.L.	...	...	...	...	...	...	...			+2	– 7,47	11,01	G.
	λ Ophiuchi	4 . 55	0 . 21,5	20,2	17,9	14,9	18,7	18,7					4 . 55 . 18,62	G.
	Mars N.L.	32 . 50	1 . 32,7	31,4	29,1	27,2	30,1	31,8					32 . 51 . 30,25	G.
	ζ Herculis R. M.	114 . 40	3 . 44,9	45,9	43,5	39,9	42,1	43,9	7,720	+ 50,37			114 . 44 . 33,42	G.
	ζ Herculis	335 . 20	2 . 30,9	26,6	27,0	22,4	26,0	27,7					335 . 22 . 26,55	G.
	Σ 2120	338 . 55	2 . 11,8	8,1	10,9	6,1	8,8	9,8					338 . 57 . 9,07	G.
	∗ Æ.$16^h.59^m.16^s$. M.	...	...	...	...	...	...	...	9,252	+ 18,43			338 . 57 . 27,50	G.
	y Ophiuchi	35 . 10	0 . 12,0	12,2	10,0	7,3	9,6	10,9					35 . 10 . 10,32	G.
	Σ 2213. *sf.*	336 . 0	3 . 51,7	48,0	49,7	43,4	47,4	48,2					336 . 3 . 47,73	G.
	(d) 70 Ophiuchi. *np.*	4 . 40	2 . 39,7	38,4	38,2	33,9	37,8	37,9					4 . 42 . 37,42	G.
	Σ 2296 M.	10 . 40	1 . 29,3	28,1	28,3	23,7	27,8	27,7	17,230	– 2 . 27,87			10 . 38 . 59,48	G.
	g Sagittarii	34 . 15	1 . 63,2	66,6	61,0	58,4	60,5	61,6					34 . 17 . 1,72	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 14,2	15,8	13,3	11,1	13,2	14,9	11,290	– 24,04			169 . 25 . 49,61	G.
	δ Ursæ Minoris	280 . 40	1 . 17,7	17,1	15,6	10,8	12,7	14,9					280 . 41 . 14,68	G.
	α Lyræ R. M.	121 . 25	3 . 24,5	25,4	21,8	20,2	19,8	22,9	6,721	+ 1 . 11,18			121 . 29 . 33,31	G.
	α Lyræ	328 . 35	2 . 29,8	27,1	26,5	22,2	26,2	27,0					328 . 37 . 26,25	G.
	Juno	9 . 30	3 . 61,0	60,2	61,2	55,7	57,8	59,7					9 . 33 . 58,92	G.
Aug. 2	(e) Mars S.L.	32 . 50	3 . 38,0	42,0	36,2	34,4	36,5	38,7					32 . 53 . 37,32	G.
	o Draconis R. M.	142 . 0	2 . 22,8	21,0	21,0	15,9	19,6	20,7	9,213	+ 19,24			142 . 2 . 39,21	G.
	o Draconis	308 . 0	4 . 26,1	25,7	24,2	18,8	20,8	23,1					308 . 4 . 22,73	G.
	(f) n Draconis R. M.	139 . 25	1 . 28,8	27,5	26,6	21,9	24,3	25,0	10,093	+ 0,89			139 . 26 . 26,46	G.
	n Draconis	310 . 40	0 . 39,4	37,0	36,8	32,6	34,9	35,9			+1	+ 0,23	310 . 40 . 36,28	G.
	δ Cygni R. M.	127 . 35	0 . 41,8	41,4	39,4	37,0	38,3	38,9	8,962	+ 24,46			127 . 36 . 3,88	G.
	δ Cygni	322 . 30	0 . 61,4	58,1	59,5	54,8	57,0	57,6					322 . 30 . 57,98	G.
	Juno	9 . 40	0 . 29,5	27,7	28,9	23,3	27,1	27,1					9 . 40 . 27,23	G.
	(g) δ U. Min. SP. R. M.	176 . 15	0 . 25,8	23,0	23,0	19,7	22,2	22,2	14,071	– 1 . 22,02		+ 2,43	176 . 14 . 3,03	G.
	δ Ursæ Minoris	273 . 50	3 . 6,8	3,2	4,5	0,0	1,9	1,8				– 2,06	273 . 53 . 0,71	G.

Runs and Coincidences at the five wires taken Aug 1, 22^h.
Aug. 1, 4^h. Molyneux fast on Hardy, $1^m.26^s,1$, and Aug. 2, 21^h. $1^m.27^s,0$.

(a) Much clouded. (b) Cloudy. Times by Molyneux, $13^h.5^m.45^s$. and $13^h.6^m.10^s$. (c) Bisected by the fixed wire. (d) Just before this observation the eye-end of the Telescope was slightly struck. (e) Cloudy. (f) Too close to the fixed wire for a good bisection. (g) Faint in all the observations. Times by Molyneux, $6^h.19^m.5^s$, $6^h.19^m.27^s$, $6^h.26^m.25^s$ and $6^h.26^m.51^s$.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
"	° ′ "	Inch.	°	°	′ "	′ "	r	′ "	° ′ "	"	
30,89	5 . 31 . 13,80		59,9	56,7	5,52				43 . 18 . 27,60	+ 6,15	τ Herculis R.
	13,69								27,49		τ Herculis.
	77 . 32 . 5,02				4 . 12,40	15,20	9,220	9,55	115 . 23 . 20,08		Mars.
31,75	− 12 . 40 . 19,29			55,8	12,87				25 . 6 . 36,12	+ 8,54	*g* Draconis R.
	17,67								37,74		*g* Draconis.
30,18	5 . 57 . 3,43				5,97				43 . 44 . 17,68	+ 7,07	52 Herculis R.
	1,91								16,16		52 Herculis.
32,06	− 34 . 22 . 15,50	29,714	57,0	53,2	39,35				3 . 24 . 13,43	+ 9,17	δ Ursæ Min. R.
	13,26								15,67		δ Ursæ Minoris.
	53 . 33 . 51,14	29,732	55,9	51,8	1 . 18,07	4,12			91 . 22 . 13,37		Juno.
31,32	2 . 21 . 0,26	30,080	54,7	50,0	2,41				40 . 8 . 10,95	+ 11,66	θ Cygni R.
	1,01								11,70		θ Cygni.
31,31	41 . 57 . 39,63				52,68				79 . 45 . 40,59	+ 12,19	γ Aquilæ R.
	40,36								41,32		γ Aquilæ.
31,21	65 . 9 . 49,88	30,084	54,2	49,5	2 . 6,16				102 . 59 . 4,32	+ 14,22	α¹ Capricorni R.
	50,42								4,86		α¹ Capricorni.
31,36	65 . 12 . 5,42				2 . 6,38				103 . 1 . 20,08	+ 14,27	α² Capricorni R.
	6,26								20,92		α² Capricorni.
	53 . 46 . 37,83		52,4	48,0	1 . 20,23	4,20			91 . 35 . 2,14		Juno.
	32 . 36 . 42,85	29,974	64,0	66,9	36,13	4,52		15 . 46,40	70 . 40 . 9,14		⊙.
	33 . 8 . 12,05				36,86	4,59			6,20		⊙.
	33 . 21 . 51,73	29,962	62,4	65,7	37,25	4,61		15 . 46,50	70 . 53 . 46,15		⊙.
	32 . 50 . 18,27				36,51	4,55			45,01		⊙.
31,05	7 . 27 . 26,53	29,888	60,2	52,7	7,59				45 . 14 . 42,40	+ 14,12	δ Cygni R.
	26,43								42,30		δ Cygni.
31,76	39 . 18 . 3,90	29,850	66,6	67,0	46,00				− 1 . 31 . 41,62	+ 0,02	Polaris SP. R.
	2,58								40,30		Polaris SP.
	65 . 45 . 37,66								102 . 56 . 59,55		☽.
	39,85				2 . 4,17	54 . 2,88		16 . 12,32	57 . 1,74		☽.
	39,91								1,80		☽.
	49 . 51 . 47,52	29,826	63,2	60,4	1 . 7,42				87 . 40 . 3,22	− 2,08	λ Ophiuchi.
	77 . 47 . 59,15				4 . 16,94	13,97	9,379	7,89	115 . 39 . 18,29		Mars.
29,99	20 . 18 . 57,68				21,08				58 . 6 . 27,04	+ 6,22	ζ Herculis R.
	55,45								24,81		ζ Herculis.
	23 . 53 . 37,97	29,820	62,0	57,2	25,38				61 . 41 . 11,63	+ 6,23	Σ 2120.
	23 . 53 . 56,40				25,38				61 . 41 . 30,06	+ 6,27	∗ Æ.16h.59m.16s.
	80 . 6 . 39,22				5 . 16,84				117 . 59 . 4,34	− 6,34	*y* Ophiuchi.
	21 . 0 . 16,63		60,3	55,7	22,07				58 . 47 . 46,98	+ 9,40	Σ 2213. *sf.*
	49 . 39 . 6,32				1 . 7,54				87 . 27 . 22,14	+ 4,23	70 Ophiuchi. *np.*
	55 . 35 . 28,38			53,5	1 . 24,07				93 . 24 . 0,73	+ 5,01	Σ 2296.
	79 . 13 . 30,62				4 . 54,14				117 . 5 . 33,04	+ 0,01	*g* Sagittarii.
32,15	− 34 . 22 . 18,51				39,47				3 . 24 . 10,30	+ 12,37	δ Ursæ Min. R.
	16,42								12,39		δ Ursæ Minoris.
29,78	13 . 33 . 57,79				13,93				51 . 21 . 20,00	+ 12,42	α Lyræ R.
	55,15								17,36		α Lyræ.
	54 . 30 . 27,82	29,796	55,7	50,8	1 . 21,15	4,40			92 . 18 . 52,85		Juno.
	77 . 50 . 6,22	29,580	60,4	57,8	4 . 16,91	13,86	10,924	8,22	115 . 41 . 9,33		Mars.
30,97	− 6 . 59 . 8,11	29,562	59,2	56,0	6,98				30 . 47 . 53,19	+ 13,91	*o* Draconis R.
	8,37								52,93		*o* Draconis.
31,37	− 4 . 22 . 55,36				4,36				33 . 24 . 8,56	+ 14,20	*n* Draconis R.
	54,82								9,10		*n* Draconis.
30,93	7 . 27 . 27,22			55,3	7,46				45 . 14 . 42,96	+ 14,73	δ Cygni R.
	26,88								42,62		δ Cygni.
	54 . 36 . 56,13	29,548	56,4	53,0	1 . 20,43	4,42			92 . 25 . 20,42		Juno.
31,87	− 41 . 10 . 31,93	29,504	60,3	62,8	48,99				− 3 . 24 . 12,64	+ 12,67	δ U. Min. SP. R.
	30,39								11,10		δ Ursæ Minoris.

Coincidence of Micrometer Wire with fixed Wire = 10r,122, 10r,124, 10r,136, 10r,143, 10r,147 at the five wires. From July 24 = 10r,127, 10r,127, 10r,136, 10r,144, 10r,148.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 5″,5. From July 24 = − 2″,6.

Adopted Zenith Point = 315°. 3′. 30″,94. From July 27 = 315°. 3′. 31″,10.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Aug. 2	δ U. Min. SP. R. M.	176 . 10	4 . 12,9	10,6	12,3	7,6	9,1	10,4	10,524	− 8,09		+ 0,90	176 . 14 . 2,93	G.
	δ Ursæ Minoris...	273 . 50	2 . 65,7	63,3	64,0	58,9	61,5	61,0				− 1,20	273 . 53 . 0,93	G.
Aug. 4	(a) ⊙ S.L. M.........	350 . 5	4 . 19,4	18,2	19,1	13,8	17,8	16,2	10,392	− 5,34			350 . 9 . 11,71	G.
	⊙ S.L.	350 . 5	4 . 12,2	9,4	12,1	5,5	10,3	7,8			+3	− 0,16	9,02	G.
	(b) δ Ursæ Min. R. M.	169 . 25	1 . 26,1	25,5	25,8	21,3	24,8	24,9	11,789	− 34,45		− 0,01	169 . 25 . 50,16	G.
	δ Ursæ Minoris...	280 . 40	1 . 15,0	14,8	13,2	9,4	12,2	13,1				+ 0,10	280 . 41 . 12,93	G.
	α Lyræ R. M.	121 . 25	3 . 27,8	28,1	25,0	22,0	23,0	25,4	6,798	+ 1 . 9,58			121 . 29 . 34,50	G.
	α Lyræ..........	328 . 35	2 . 29,4	28,3	27,1	23,8	27,2	27,4					328 . 37 . 26,98	G.
	(c) β Lyræ R. M.	116 . 0	1 . 27,1	25,5	22,8	21,7	23,0	24,1	7,760	+ 49,78	+2	− 0,40	116 . 2 . 13,30	G.
	β Lyræ..........	334 . 0	4 . 48,0	46,0	46,5	41,0	45,9	45,7			+3	+ 0,88	344 . 4 . 45,98	G.
	n Draconis R. M..	139 . 25	1 . 50,0	49,9	48,4	44,8	46,9	47,6	11,060	− 19,26			139 . 26 . 28,52	G.
	n Draconis........	310 . 40	0 . 39,5	37,7	36,4	32,7	35,9	36,0					310 . 40 . 36,32	G.
Aug. 5	⊙ N.L. M.	349 . 50	4 . 20,9	18,4	19,3	14,1	18,4	17,9	12,170	− 42,40			349 . 53 . 35,40	G.
	⊙ S.L.	350 . 20	5 . 10,9	8,0	11,0	3,8	7,9	6,9					350 . 25 . 7,63	G.
	(d) Mars N.L.	32 . 55	3 . 53,9	54,4	51,1	48,1	52,2	51,7					32 . 58 . 51,57	G.
	52 Herculis R. M.	129 . 5	1 . 27,2	24,5	23,9	21,8	23,5	25,0	9,862	+ 5,71			129 . 6 . 29,91	G.
	52 Herculis	321 . 0	0 . 35,0	30,2	31,0	26,4	29,9	30,8					321 . 0 . 30,50	G.
	h Draconis R. M. .	148 . 10	3 . 24,1	20,1	20,9	17,0	20,0	21,0	10,763	− 13,08			148 . 13 . 7,15	G.
	h Draconis.......	301 . 50	3 . 57,7	52,6	55,9	49,0	51,8	53,0					301 . 53 . 53,00	G.
	Σ 2120...........	338 . 55	2 . 11,6	7,0	10,5	4,4	8,7	8,0					338 . 57 . 8,18	G.
	(e) ☽ N.L. M.........	32 . 0	1 . 14,8	12,1	11,7	8,7	11,7	12,9	10,760	− 13,20	−2	− 0,54	32 . 0 . 58,14	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,758	− 13,16	−1	− 0,20	58,52	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,737	− 12,53			59,35	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,755	− 12,74	+1	+ 0,06	59,20	G.
	☽ N.L. M.........	...	...	...	...	..	...	...	10,747	− 12,49	+2	− 0,02	59,37	G.
	D Ophiuchi......	28 . 45	4 . 12,1	7,1	10,6	5,9	9,0	10,0					28 . 49 . 8,75	G.
	4 Sagittarii.......	31 . 0	0 . 20,8	18,2	18,2	15,0	17,9	18,7					31 . 0 . 18,10	G.
	δ Ursæ Min. R. M.	169 . 25	0 . 45,0	42,2	43,1	40,2	42,2	42,9	9,788	+ 7,25			169 . 25 . 49,78	G.
	δ Ursæ Minoris...	280 . 40	1 . 16,9	13,0	13,4	9,7	10,1	13,7					280 . 41 . 12,70	G.
	β Lyræ R. M.	116 . 0	1 . 26,8	24,0	22,1	19,8	20,3	22,8	7,580	+ 53,28			116 . 2 . 15,80	G.
	β Lyræ..........	334 . 0	4 . 49,2	44,1	46,8	41,6	45,2	45,2					334 . 4 . 44,95	G.
Aug. 7	Mars N.L.	33 . 0	2 . 46,0	46,0	41,8	40,4	42,0	43,7					33 . 2 . 43,17	G.
	(f) Σ 2104	331 . 0	3 . 62,1	60,6	60,0	55,4	58,8	57,9			+2	+ 0,44	331 . 3 . 59,34	G.
	α Herculis R. M...	97 . 20	4 . 15,3	13,1	12,8	10,8	9,8	12,8	5,162	+ 1 . 43,68			97 . 25 . 55,88	G.
	α Herculis.......	352 . 40	1 . 8,7	7,5	7,5	4,1	6,9	6,0					352 . 41 . 6,72	G.
	Σ 2147	338 . 10	0 . 42,9	41,2	41,0	37,3	40,9	39,3					338 . 10 . 40,40	G.
	∗ Æ. $17^{h}.11^{m}.47^{s}$. M.	...	...	...	...	...	...	...	8,895	+ 25,86			338 . 11 . 6,26	G.
	y Ophiuchi.......	35 . 10	0 . 15,0	14,1	11,8	10,7	11,9	12,9					35 . 10 . 12,72	G.
	γ Ophiuchi R. M..	85 . 35	1 . 37,9	38,0	35,0	32,8	34,2	36,0	5,636	+ 1 . 33,80			85 . 38 . 9,37	G
	γ Ophiuchi.......	4 . 25	3 . 54,8	53,0	54,4	49,7	52,8	53,1					4 . 28 . 52,75	G.
	(g) ∗ Æ. $17^{h}.46^{m}.15^{s}$.	325 . 25	0 . 60,8	57,1	58,8	53,9	57,4	56,1					325 . 25 . 57,30	G.
	∗ Æ. $17^{h}.46^{m}.15^{s}$. M.	...	...	...	...	...	...	...	4,873	+ 1 . 49,70			325 . 27 . 47,00	G.
	(h) ∗ Æ. $17^{h}.46^{m}.38^{s}$. M.	...	...	...	...	...	...	...	82,935	+ 5 . 58,54			325 . 31 . 55,84	G.
	Σ 2296 M	10 . 40	0 . 46,2	44,2	43,3	39,7	42,9	41,9	15,028	− 1 . 41,98			10 . 39 . 1,02	G.
	g Sagittarii.......	34 . 15	2 . 4,8	5,4	1,9	0,0	1,0	2,0					34 . 17 . 2,40	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 14,8	13,1	12,1	11,8	12,6	13,2	11,226	− 22,72			169 . 25 . 50,15	G.
	δ Ursæ Minoris...	280 . 40	1 . 15,4	12,8	11,9	9,0	10,8	12,0					280 . 41 . 11,92	G.
	α Lyræ R. M.	121 . 25	3 . 24,9	22,8	21,9	19,3	20,1	21,4	6,590	+ 1 . 13,91			121 . 29 . 35,46	G.
	α Lyræ..........	328 . 35	2 . 29,3	25,3	25,1	22,1	26,2	25,1					328 . 37 . 25,38	G.
	σ Sagittarii.......	33 . 40	0 . 48,7	47,3	44,9	43,1	45,5	45,2					33 . 40 . 45,73	G.
	o Sagittarii.......	29 . 10	0 . 52,2	50,2	50,0	47,9	49,2	50,0					29 . 10 . 49,87	G.
	(i) ☽ S.L. M.........	29 . 15	4 . 57,7	56,1	56,4	52,1	54,8	56,4	11,185	− 22,05	−2	− 4,58	29 . 19 . 28,67	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,408	− 26,70	−1	− 2,23	26,37	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,520	− 28,84			26,46	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,586	− 30,05	+1	+ 2,11	27,36	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,669	− 31,70	+2	+ 4,10	27,70	G.
	Juno	10 . 15	0 . 35,5	33,9	32,4	29,8	32,1	32,8					10 . 15 . 32,72	G.

Aug. 4, 10^{h}. Molyneux fast on Hardy, $1^{m}.28^{s},0$.
Runs taken Aug. 11, 22^{h}.

(a) Dark clouds passing. The same Limb was inadvertently observed again. (b) Times by Molyneux, $18^{h}.24^{m}.0^{s}$ and $18^{h}.24^{m}.32^{s}$. (c) Faint from cloudiness. (d) Exceedingly faint and unsteady. (e) Badly defined and very unsteady. (f) Very faint: not seen double. (g) Barely visible: less than the next by at least one magnitude. (h) Bisection difficult. (i) Extremely doubtful from cloudiness.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
31,93	− 41 . 10 . 31,83				48,99				− 3 . 24 . 12,54	+ 12,67	δ U. Min. SP. R.
	30,17								10,88		δ Ursæ Minoris.
	35 . 5 . 40,61	29,458	62,0	65,0	39,14	4,83		15 . 47,30	72 . 37 . 35,90		☉.
	37,92								33,21		☉.
31,55	− 34 . 22 . 19,06	29,528	59,0	53,6	39,07				3 . 24 . 10,15	+ 13,07	δ Ursæ Min. R.
	57,24								11,04		δ Ursæ Min.
30,74	13 . 33 . 56,60				13,79				51 . 21 . 18,67	+ 13,14	α Lyræ R.
	55,88								17,95		α Lyræ.
29,64	19 . 1 . 17,80				19,70				56 . 48 . 45,78	+ 13,18	β Lyræ R.
	14,88								42,86		β Lyræ.
32,42	− 4 . 22 . 57,42				4,38				33 . 24 . 6,48	+ 14,81	n Draconis R.
	54,78								9,12		n Draconis.
	34 . 50 . 4,30	29,768	62,0	65,5	39,13	4,80		15 . 47,50	72 . 53 . 34,41		☉.
	35 . 21 . 36,53				39,90	4,86			32,35		☉.
	77 . 55 . 20,47	29,804	60,3	57,7	4 . 20,75	13,55	9,459	7,06	115 . 46 . 43,01		Mars.
30,21	5 . 57 . 1,19	-			5,96				43 . 44 . 15,43	+ 9,68	52 Herculis R.
	56 . 59,40								13,64		52 Herculis.
30,08	− 13 . 9 . 36,05				13,38				24 . 37 . 18,85	+ 11,74	h Draconis R.
	38,10								16,80		h Draconis.
	23 . 53 . 37,08				25,34				61 . 41 . 10,70	+ 6,79	Σ 2120.
	76 . 57 . 27,04			55,3					114 . 8 . 6,13		☽.
	27,42								6,51		☽.
	28,25				4 . 2,90	56 . 19,94		15 . 47,85	7,34		☽.
	28,10								7,19		☽.
	28,27								7,36		☽.
	73 . 45 . 37,65				3 . 14,64				111 . 36 . 0,57	− 2,45	D Ophiuchi.
	75 . 56 . 47,00		58,3	54,0	3 . 46,05				113 . 47 . 41,33	− 1,32	4 Sagittarii.
31,24	− 34 . 22 . 18,68	29,800	57,2	52,2	39,54				3 . 24 . 10,06	+ 13,27	δ Ursæ Min. R.
	18,40								10,34		δ Ursæ Minoris.
30,38	19 . 1 . 15,30				19,94				56 . 48 . 43,52	+ 13,41	β Lyræ R.
	13,85								42,07		β Lyræ.
	77 . 59 . 12,07	30,138	61,7	61,9	4 . 22,78	13,34	9,455	7,10	115 . 50 . 36,89		Mars.
	16 . 0 . 28,24				16,46				53 . 47 . 52,98	+ 8,29	Σ 2104.
31,30	37 . 37 . 35,22				44,19				75 . 25 . 27,69	+ 5,00	α Herculis R.
	35,62								28,09		α Herculis.
	23 . 7 . 9,30				24,49				60 . 54 . 42,07	+ 8,57	Σ 2147.
	23 . 7 . 35,16				24,50				60 . 55 . 7,94	+ 8,59	∗Æ.17h.11m.47s.
	80 . 6 . 41,62			61,9	5 . 17,13				117 . 59 . 7,03	− 6,44	y Ophiuchi.
31,06	49 . 25 . 21,73	30,148	61,3	59,8	1 . 7,17				87 . 13 . 37,18	+ 4,56	γ Ophiuchi R.
	21,65								37,10		γ Ophiuchi.
	10 . 22 . 26,20				10,55				48 . 9 . 45,03	+ 12,33	∗Æ.17h.46m.15s.
	10 . 24 . 15,9				10,58				48 . 11 . 34,76	+ 12,33	∗Æ.17h.46m.15s.
	10 . 28 . 24,74				10,65				48 . 15 . 43,67	+ 12,34	∗Æ.17h.46m.38s.
	55 . 35 . 29,92				1 . 23,92				93 . 24 . 2,12	+ 5,49	Σ 2296.
	79 . 13 . 31,30				4 . 53,47				117 . 5 . 33,05	− 0,16	g Sagittarii.
31,04	− 34 . 22 . 19,05			59,5	39,42				3 . 24 . 9,81	+ 13,77	δ Ursæ Min. R.
	19,18								9,68		δ Ursæ Minoris.
30,42	13 . 33 . 55,64				13,91				51 . 21 . 17,83	+ 13,86	α Lyræ R.
	54,28								16,47		α Lyræ.
	78 . 37 . 14,63	30,168	60,9	59,7	4 . 38,60				116 . 29 . 1,51	+ 4,27	σ Sagittarii.
	74 . 7 . 18,77				3 . 19,79				111 . 57 . 46,84	+ 6,26	o Sagittarii.
	74 . 15 . 57,57								110 . 56 . 14,51		☽.
	55,27								12,21		☽.
	55,36				3 . 21,65	54 . 41,46		15 . 31,53	12,30		☽.
	56,26								13,20		☽.
	56,60								13,54		☽.
	55 . 12 . 1,62	30,158	60,0	57,6	1 . 23,10	4,53			93 . 0 . 28,47		Juno.

Coincidence of Micrometer Wire with fixed wire = 10r,127, 10r,127, 10r,136, 10r,144, 10r,148 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = − 2″,6. From Aug. 7 = − 1″,7.
Adopted Zenith Point = 315°. 3′. 31″,10.
Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Aug. 8	⊙ S.L. M........	351 . 15	0 . 41,2	43,1	40,0	37,5	43,4	38,0	12,777	– 55,05			351 . 14 . 45,45	G.
	⊙ N.L............	350 . 40	3 . 10,5	10,8	9,9	5,1	10,7	6,8					353 . 43 . 8,78	G.
	(a) e^2 Sagittarii	23 . 40	2 . 57,5	57,2	54,9	51,7	56,1	55,8					23 . 42 . 55,37	G.
	(a) β Aquilæ R. M...	88 . 50	3 . 17,1	13,8	13,1	10,3	12,3	14,7	10,667	– 11,07			88 . 53 . 2,30	G.
	β Aquilæ	1 . 10	3 . 61,1	58,9	59,2	54,5	60,0	58,9					1 . 13 . 58,53	G.
Aug. 10	Mars S.L.........	33 . 5	3 . 52,6	51,4	49,0	46,0	47,9	50,4			+2	– 0,34	33 . 8 . 48,99	G.
	h Draconis R. M. .	148 . 10	3 . 27,5	24,1	24,9	18,4	22,4	23,5	10,738	– 12,55			148 . 13 . 10,72	G.
	h Draconis	301 . 50	3 . 59,1	54,8	56,9	50,0	52,8	54,0					301 . 53 . 54,38	G.
	α Herculis R. M. .	97 . 20	4 . 26,4	21,5	22,8	18,8	19,7	23,0	5,627	+ 1 . 33,99			97 . 25 . 55,77	G.
	α Herculis........	352 . 40	1 . 9,1	3,0	6,8	0,4	2,7	3,9					352 . 41 . 4,25	G.
	Σ 2147	338 . 10	0 . 45,0	39,0	41,6	36,1	38,9	40,1					338 . 10 . 40,08	G.
	⁎Æ.17ʰ.11ᵐ.47ˢ.M.	...	...	...	...	...	...	...	8,924	+ 25,26			338 . 11 . 5,34	G.
	y Ophiuchi.......	35 . 10	0 . 12,1	9,0	9,0	6,0	7,3	8,1					35 . 10 . 8,57	G.
	g Sagittarii	34 . 15	1 . 62,6	58,9	58,0	53,8	54,8	57,8					34 . 16 . 57,53	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 27,9	23,8	24,9	20,1	24,0	24,5	11,673	– 32,04			169 . 25 . 52,08	G.
	δ Ursæ Minoris ...	280 . 40	1 . 18,2	13,9	14,5	10,4	10,9	14,0					280 . 41 . 13,58	G.
	⁎Æ.19ʰ.47ᵐ.29ˢ.M.	345 . 5	2 . 51,5	44,8	49,1	41,5	45,8	45,9	19,365	– 3 . 12,38			345 . 4 . 33,90	G.
	(b) Σ 2600. *sp.* M.....	...	...	...	...	...	...	...	3,790	+ 2 . 12,27			345 . 9 . 58,55	G.
	$α^1$ Capricorni R. M.	69 . 50	1 . 33,0	28,0	29,4	24,1	26,8	28,2	3,700	+ 2 . 13,97	–2	+ 0,14	69 . 53 . 42,28	G.
	$α^1$ Capricorni	20 . 10	3 . 24,5	19,9	22,2	16,0	17,8	20,7			+2	– 0,14	20 . 13 . 19,86	G.
	$α^2$ Capricorni R. M.	69 . 50	1 . 33,0	28,0	29,4	24,1	26,8	28,2	10,228	– 2,10	–2	+ 0,14	69 . 51 . 26,21	G.
	$α^2$ Capricorni M...	20 . 10	3 . 24,5	19,9	22,2	16,0	17,8	20,7	3,621	+ 2 . 16,05	+2	– 0,14	20 . 15 . 35,91	G.
	β Aquarii R. M...	76 . 30	4 . 30,0	23,9	27,1	20,8	21,2	26,5	2,400	+ 2 . 41,26			76 . 37 . 5,93	G.
	β Aquarii.........	13 . 25	4 . 60,5	55,4	58,2	51,6	53,2	56,5					13 . 29 . 55,62	G.
	Juno.............	10 . 35	3 . 53,8	48,9	51,5	44,2	46,0	49,7					10 . 38 . 48,80	G.
	δ Capricorni......	24 . 0	3 . 43,9	38,9	41,7	34,6	35,9	39,7					24 . 3 . 38,92	G.
	(c) ☽ N.L. M.........	16 . 15	1 . 11,1	6,5	8,5	2,2	3,3	6,3	10,597	– 9,80	–2	– 7,02	16 . 15 . 49,43	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,830	– 14,65	–1	– 3,49	48,11	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,992	– 17,85			48,40	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	11,120	– 20,35	+1	+ 3,43	49,33	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	11,291	– 23,81	+2	+ 6,82	49,26	G.
	θ Aquarii.........	15 . 45	2 . 63,0	58,4	61,1	54,3	55,4	58,0					15 . 47 . 58,20	G.
	ζ Aquarii. *sf*......	8 . 0	3 . 63,1	57,1	61,8	54,9	56,1	58,9					8 . 3 . 58,43	G.
Aug. 11	⊙ N.L. M........	351 . 30	4 . 16,8	13,8	15,3	10,1	12,9	13,1	7,530	+ 54,33			351 . 35 . 7,76	G.
	⊙ S.L.	352 . 5	1 . 44,7	41,9	42,4	36,1	40,5	40,0					352 . 6 . 40,83	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 39,4	38,0	36,9	32,4	36,7	35,9	11,324	– 24,76			145 . 26 . 11,69	G.
	α Ursæ Majoris...	304 . 40	0 . 55,0	52,5	52,6	48,0	51,0	49,5					304 . 40 . 51,38	G.
	Mars N.L.........	33 . 10	0 . 36,6	38,0	32,0	32,3	33,8	35,3					33 . 10 . 34,63	G.
	y Ophiuchi.......	35 . 10	0 . 13,8	14,4	10,4	9,5	10,4	12,9					35 . 10 . 11,88	G.
	α Ophiuchi R. M.	95 . 30	1 . 57,1	53,1	52,2	50,8	51,9	53,9	8,921	+ 25,32			95 . 32 . 18,39	G.
	α Ophiuchi	354 . 30	4 . 46,3	46,6	45,0	40,6	45,5	44,6					354 . 34 . 44,50	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 30,2	28,1	26,8	23,4	26,8	27,9	11,869	– 36,12			169 . 25 . 51,00	G.
	δ Ursæ Minoris ...	280 . 40	1 . 17,0	13,5	12,9	8,9	10,7	13,1					280 . 41 . 12,62	G.
	α Lyræ R. M......	121 . 25	3 . 26,6	24,1	22,1	19,4	20,1	23,2	6,601	+ 1 . 13,68			121 . 29 . 36,08	G.
	α Lyræ...........	328 . 35	2 . 29,0	25,9	24,6	20,4	24,2	25,0					328 . 37 . 24,72	G.
	⁎ Æ. 18ʰ. 58ᵐ. 30ˢ.	331 . 40	2 . 44,8	40,9	42,1	36,8	40,8	39,9					331 . 42 . 40,73	G.
	⁎Æ.19ʰ.47ᵐ.29ˢ.M.	345 . 5	1 . 56,2	52,9	53,2	49,3	55,3	53,0	16,889	– 2 . 20,75			345 . 4 . 32,47	G.
	Σ 2600. *sp.* M.....	...	...	...	...	...	...	...	1,226	+ 3 . 5,72			345 . 9 . 58,94	G.
	$α^1$ Capricorni R. M.	69 . 50	2 . 28,1	26,8	24,2	20,8	23,7	25,1	6,498	+ 1 . 15,65	–2	+ 0,14	69 . 53 . 40,44	G.
	$α^1$ Capricorni.....	20 . 10	3 . 23,2	22,0	21,2	15,8	19,1	20,0			+2	– 0,14	20 . 13 . 19,89	G.
	$α^2$ Capricorni R. M.	69 . 50	2 . 28,1	26,8	24,2	20,8	23,7	25,1	13,035	– 1 . 0,62	–2	+ 0,14	69 . 51 . 24,17	G.
	$α^2$ Capricorni M...	20 . 10	3 . 23,2	22,0	21,2	15,8	19,1	20,0	3,619	+ 2 . 16,09	+2	– 0,14	20 . 15 . 35,98	G.
	Juno.............	10 . 45	1 . 58,1	55,7	57,3	51,2	54,7	55,0					10 . 46 . 55,23	G.
	θ Aquarii	15 . 45	2 . 63,3	61,6	62,1	55,9	58,5	59,0					15 . 47 . 59,90	G.
	ζ Aquarii. *sf*......	8 . 0	3 . 62,1	60,0	61,2	55,2	58,9	58,9					8 . 3 . 59,17	G.
	(d) ☽ N.L. M.........	11 . 10	0 . 17,1	15,4	15,0	11,0	13,0	12,9	10,493	– 7,63	–2	– 7,08	11 . 9 . 59,34	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,722	– 12,40	–1	– 3,53	58,12	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,886	– 15,63			58,42	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	11,020	– 18,27	+1	+ 3,51	59,29	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	11,233	– 22,61	+2	+ 7,00	58,44	G.

(a) Very cloudy.
(b) The stars are very close.
(c) Exceedingly bright, but not well defined.
(d) Not well defined.

Sec. of apparent Zenith Poiot.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	36 . 11 . 14,35	30,174	68,0	73,0	41,08	4,96		15 . 47,90	73 . 43 . 10,85		☉.
	35 . 39 . 37,68				40,29	4,90			9,25		☉.
	68 . 39 . 24,27	30,130	65,2	62,0	2 . 25,58				106 . 28 . 58,13	+ 11,22	e^2 Sagittarii.
30,42	46 . 10 . 28,80				59,66				83 . 58 . 36,74	+ 14,73	β Aquilæ R.
	27,43								35,37		β Aquilæ.
	78 . 5 . 17,89	30,106	60,1	55,0	4 . 28,50	13,03	10,916	8,01	115 . 56 . 33,63		Mars.
32,55	− 13 . 9 . 39,62				13,59				24 . 37 . 15,07	+ 12,46	*h* Draconis R.
	36,72								17,97		*h* Draconis.
30,01	37 . 37 . 35,33				44,76				75 . 25 . 28,37	+ 5,34	α Herculis R.
	33,15								26,19		α Herculis.
	23 . 7 . 8,98				24,80				60 . 54 . 42,06	+ 8,97	Σ 2147.
	23 . 7 . 34,24				24,81				60 . 55 . 7,33	+ 9,00	∗Æ.$17^h.11^m.47^s$.
	80 . 6 . 37,47			55,0	5 . 21,34				117 . 59 . 7,09	− 6,49	*y* Ophiuchi.
	79 . 13 . 26,43	30,124	58,4	52,1	4 . 57,98				117 . 5 . 32,69	− 0,23	*g* Sagittarii.
32,83	− 34 . 22 . 20,98				39,98				3 . 24 . 7,32	+ 14,57	δ Ursæ Min. R.
	17,52								10,78		δ Ursæ Minoris.
	30 . 1 . 2,80	30,148	56,2	49,7	33,97				67 . 48 . 45,05	+ 16,60	∗Æ.$19^h.47^m.29^s$.
	30 . 6 . 27,45	-			34,09				67 . 54 . 9,82	+ 16,63	Σ 2600. *sp.*
31,07	65 . 9 . 48,82				2 . 6,38				102 . 59 . 3,48	+ 15,12	α^1 Capricorni R.
	48,76								3,42		α^1 Capricorni.
31,06	65 . 12 . 4,89				2 . 6,59				103 . 1 . 19,76	+ 15,22	α^2 Capricorni R.
	4,81								19,68		α^2 Capricorni.
30,78	58 . 26 . 25,17	30,144	54,6	48,4	1 . 35,70				96 . 15 . 9,15	+ 21,17	β Aquarii R.
	24,52								8,50		β Aquarii.
	55 . 35 . 17,70				1 . 25,86	4,59			93 . 23 . 47,25		Juno.
	69 . 0 . 7,82				2 . 32,41				106 . 49 . 48,51	+ 22,45	δ Capricorni.
	61 . 12 . 18,33	30,150	54,5	48,0					98 . 27 . 55,96		☽.
	17,01								54,64		☽.
	17,30				1 . 46,97	48 . 23,83		15 . 6,21	54,93		☽.
	18,23								55,86		☽.
	18,16								55,79		☽.
	60 . 44 . 27,10				1 . 44,97				98 . 33 . 20,35	+ 23,98	θ Aquarii.
	53 . 0 . 27,33				1 . 18,19				90 . 48 . 53,80	+ 23,74	ζ Aquarii. *sf.*
	36 . 31 . 36,66	30,228	63,6	64,9	42,34	5,01		15 . 48,40	74 . 35 . 10,67		☉.
	37 . 3 . 9,73				43,15	5,07			7,69		☉.
31,54	− 10 . 22 . 40,59		64,1	66,1	10,45				27 . 24 . 17,24	− 7,92	α Ursæ Maj. R.
	39,72								18,11		α Ursæ Majoris.
	78 . 7 . 3,53	30,218	63,0	60,5	4 . 27,08	12,93	9,423	7,43	115 . 58 . 33,39		Mars.
	80 . 6 . 40,78			59,5	5 . 19,54				117 . 59 . 8,60	− 6,51	*y* Ophiuchi.
31,45	39 . 31 . 12,71				47,64				77 . 19 . 8,63	+ 6,52	α Ophiuchi R.
	13,40								9,32		α Ophiuchi.
31,81	− 34 . 22 . 19,90		62,3	57,3	39,68				3 . 24 . 8,70	+ 14,77	δ Ursæ Min. R.
	18,48								10,12		δ Ursæ Minoris.
30,40	13 . 33 . 55,02				14,01				51 . 21 . 17,31	+ 14,76	α Lyræ R.
	53,62								15,91		α Lyræ.
	16 . 39 . 9,63	30,216	61,3	55,5	17,42				54 . 26 . 35,33	+ 15,68	∗Æ.$18^h.58^m.30^s$.
	30 . 1 . 1,37		60,1	54,6	33,71				67 . 48 . 43,36	+ 16,80	∗Æ.$19^h.47^m.29^s$.
	30 . 6 . 27,84				33,83				67 . 54 . 9,95	+ 16,84	Σ 2600. *sp.*
30,17	65 . 9 . 50,66				2 . 5,40				102 . 59 . 4,34	+ 15,15	α^1 Capricorni R.
	48,79								2,47		α^1 Capricorni.
30,08	65 . 12 . 6,93				2 . 5,62				103 . 1 . 20,83	+ 15,25	α^2 Capricorni R.
	4,88								18,78		α^2 Capricorni.
	55 . 43 . 24,13		58,0	52,5	1 . 25,78	4,61			93 . 31 . 53,58		Juno.
	60 . 44 . 28,80		58,2	53,7	1 . 43,98				98 . 33 . 21,06	+ 24,05	θ Aquarii.
	53 . 0 . 28,07				1 . 17,46				90 . 48 . 53,81	+ 23,88	ζ Aquarii. *sf.*
	56 . 6 . 28,24			54,3					93 . 24 . 35,16		☽.
	27,02								33,94		☽.
	27,32				1 . 26,70	45 . 26,88		14 . 58,82	34,24		☽.
	28,19								35,11		☽.
	27,34								34,26		☽.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,127, 10ʳ,127, 10ʳ,136, 10ʳ,144, 10ʳ,148 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = − 1″,7.
Adopted Zenith Point = 315° . 3′ . 31″,10.
Assumed Co-latitude = 37° . 47′ . 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Aug. 11	β Piscium.........	4 . 15	1 . 20,8	19,1	18,7	13,6	15,9	17,0					4 . 16 . 17,45	G.
	γ Piscium.	4 . 45	4 . 21,0	19,0	19,1	13,5	16,7	18,1					4 . 49 . 17,65	G.
Aug. 12	⊙ S.L. M.........	352 . 20	4 . 29,9	29,9	27,2	24,1	28,8	27,2	9,960	+ 3,67			352 . 24 . 31,27	G.
	⊙ N.L.	351 . 50	2 . 58,0	57,8	57,3	53,0	56,8	54,0					351 . 52 . 55,98	G.
	Mars S.L.........	33 . 10	2 . 49,0	49,0	44,9	42,0	46,0	47,5					33 . 12 . 46,25	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 38,7	35,9	36,0	32,4	36,5	35,7	12,199	− 43,00			169 . 25 . 52,78	G.
	δ Ursæ Minoris ...	280 . 40	1 . 15,5	12,1	12,0	8,3	10,4	11,8					280 . 41 . 11,62	G.
	α Lyræ R. M.	121 . 25	3 . 27,2	24,1	22,9	21,1	20,9	23,3	6,609	+ 1 . 13,52			121 . 29 . 36,57	G.
	α Lyræ..........	328 . 35	2 . 28,8	24,1	23,2	21,0	23,9	24,7					328 . 37 . 24,15	G.
	δ Cygni R. M.....	127 . 35	1 . 28,9	23,3	24,1	20,4	22,5	23,9	10,944	− 16,85			127 . 36 . 6,92	G.
	δ Cygni...........	322 . 30	0 . 59,5	54,0	55,5	52,0	53,1	54,9					322 . 30 . 54,78	G.
	⁎ Æ.19ʰ.47ᵐ.29ˢ.M.	345 . 5	1 . 66,0	60,2	62,1	58,2	62,3	61,3	17,282	− 2 . 28,95			345 . 4 . 32,62	G.
	Σ 2600. *sp.* M.....	...	...	...	...	...	...	...	1,722	+ 2 . 55,38			345 . 9 . 56,95	G.
	Juno.............	10 . 55	0 . 14,0	11,0	11,4	8,1	9,4	11,6					10 . 55 . 10,90	G.
	ι Aquarii R. M....	68 . 15	0 . 18,0	15,0	14,0	11,1	12,6	15,1	9,170	+ 20,14			68 . 15 . 34,42	G.
	ι Aquarii.........	21 . 50	1 . 29,0	26,3	24,0	20,4	22,8	25,6					21 . 51 . 24,60	G.
Aug. 14	⊙ S.L. M.........	353 . 0	1 . 26,7	26,2	24,4	22,3	26,0	23,0	11,560	− 29,81			353 . 0 . 54,87	G.
	⊙ N.L............	352 . 25	4 . 20,4	18,4	18,6	13,6	17,7	16,2					352 . 29 . 17,23	G.
	Mars S.L..........	33 . 15	1 . 48,0	49,2	43,0	44,0	46,3	46,4					33 . 16 . 46,05	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 36,3	36,9	34,2	31,8	34,9	34,4	12,110	− 41,27			169 . 25 . 53,40	G.
	δ Ursæ Minoris ...	280 . 40	1 . 13,9	14,6	11,0	8,0	10,2	11,7					280 . 41 . 11,50	G.
	α Lyræ R. M.	121 . 25	3 . 24,6	26,2	20,4	20,3	19,7	21,9	6,534	+ 1 . 14,96			121 . 29 . 36,96	G.
	α Lyræ...........	328 . 35	2 . 27,8	26,4	24,0	21,4	25,3	24,4					328 . 37 . 24,75	G.
	⁎ Æ. 19ʰ.47ᵐ.58ˢ.	345 . 10	4 . 17,9	16,2	15,0	10,4	15,4	15,1					345 . 14 . 14,77	G.
	α¹ Capricorni R. M.	69 . 50	2 . 26,9	26,8	23,4	20,8	23,3	25,2	6,601	+ 1 . 13,29	−2	+ 0,14	69 . 53 . 37,70	G.
	α¹ Capricorni.....	20 . 10	3 . 25,4	25,9	23,4	19,6	21,8	24,2			+2	− 0,14	20 . 13 . 23,06	G.
	α² Capricorni R. M.	69 . 50	2 . 26,9	26,8	23,4	20,8	23,3	25,2	13,114	− 1 . 2,48	−2	+ 0,14	69 . 51 . 21,93	G.
	α² Capricorni M...	20 . 10	3 . 25,4	25,9	23,4	19,6	21,8	24,2	3,620	+ 2 . 15,69	+2	− 0,14	20 . 15 . 38,75	G.
	Juno.............	11 . 10	2 . 13,1	14,4	11,9	8,2	9,4	10,8					11 . 12 . 11,18	G.
Aug. 15	Mars N.L.........	33 . 15	3 . 27,0	27,1	23,1	21,9	24,3	26,1			+2	− 0,34	33 . 18 . 24,39	G.
	(*a*) Σ 2296. *sp.* M.....	10 . 40	1 . 17,8	20,0	15,1	12,7	15,1	14,9	16,510	− 2 . 12,98			10 . 39 . 2,89	G.
	⁎ Æ. 18ʰ. 20ᵐ. 29ˢ.	349 . 5	0 . 20,0	21,9	19,1	15,1	18,4	18,9					349 . 5 . 18,88	G.
	e Serpentis........	8 . 20	1 . 32,8	33,1	30,9	28,9	31,0	30,9					8 . 21 . 31,18	G.
	α Lyræ R. M......	121 . 25	3 . 32,0	31,8	28,0	25,9	26,3	28,2	6,880	+ 1 . 7,93	+1	− 0,12	121 . 29 . 36,31	G.
	α Lyræ...........	328 . 35	2 . 27,3	26,4	23,8	20,9	23,4	24,5			+2	+ 0,48	328 . 37 . 24,73	G.
Aug. 16	Mars S.L.........	33 . 20	0 . 37,9	39,0	34,5	31,8	35,6	36,7					33 . 20 . 35,88	G.
	(*b*) α Ophiuchi R. M. .	95 . 30	1 . 36,9	36,1	32,5	31,0	33,6	33,8	8,008	+ 44,23			95 . 32 . 18,15	G.
	α Ophiuchi.......	354 . 30	4 . 45,9	46,0	44,7	39,4	44,0	43,9					354 . 34 . 43,78	G.
	g Sagittarii........	34 . 15	2 . 7,2	9,2	3,8	1,7	3,9	5,1					34 . 17 . 5,07	G.
	⁎ Æ. 18ʰ . 20ᵐ . 29ˢ.	349 . 5	0 . 19,8	18,9	17,9	13,1	16,9	16,9					349 . 5 . 17,23	G.
	e Serpentis........	8 . 20	1 . 32,0	32,3	29,8	27,1	29,9	29,1					8 . 21 . 29,97	G.
	α Lyræ R. M......	121 . 25	3 . 27,9	28,5	23,8	22,0	22,9	24,3	6,689	+ 1 . 11,72			121 . 29 . 36,47	G.
	α Lyræ............	328 . 35	2 . 28,1	27,0	24,5	20,8	24,8	24,6					328 . 37 . 24,87	G.
	α¹ Capricorni R. M.	69 . 50	2 . 11,2	11,9	8,0	5,4	7,9	9,2	5,788	+ 1 . 30,24	−2	+ 0,14	69 . 53 . 39,21	G.
	α¹ Capricorni......	20 . 10	3 . 25,9	27,1	23,7	20,0	23,8	24,1			+2	− 0,14	20 . 13 . 23,81	G.
	α² Capricorni R. M.	69 . 50	2 . 11,2	11,9	8,0	5,4	7,9	9,2	12,394	− 47,47	−2	+ 0,14	69 . 51 . 21,50	G.
	α² Capricorni M...	20 . 10	3 . 25,9	27,1	23,7	20,0	23,8	24,1	3,612	+ 2 . 16,15	+2	− 0,14	20 . 15 . 39,96	G.
	Juno.............	11 . 25	4 . 45,8	45,1	45,0	38,9	43,3	43,6					11 . 29 . 43,42	G.
	(*c*) ν Cephei R. M. ...	143 . 10	4 . 39,1	39,4	37,5	33,2	37,3	38,9	9,852	+ 5,80			143 . 14 . 43,17	G.
	(*c*) ν Cephei...... ...	306 . 50	2 . 25,2	21,1	21,4	17,2	18,8	20,4					306 . 52 . 20,58	G.
Aug. 17	⊙ N.L. M........	353 . 25	1 . 26,1	26,2	24,0	21,2	24,9	23,1	12,590	− 51,28			353 . 25 . 32,90	G.
	⊙ S.L.	353 . 55	2 . 11,2	12,0	10,8	7,2	10,5	9,7					353 . 57 . 10,13	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 28,4	26,1	25,0	21,3	24,2	25,0	10,838	− 14,76			145 . 26 . 10,17	G.
	α Ursæ Majoris ...	304 . 40	0 . 56,0	54,0	53,0	49,0	52,3	50,8					304 . 40 . 52,48	G.
	Mars N.L.........	33 . 20	2 . 13,0	18,0	10,4	12,4	12,9	15,1					33 . 22 . 13,53	G.
	(*b*) δ Ursæ Min. R. M.	169 . 25	1 . 23,9	23,1	21,0	18,9	21,3	22,9	11,459	− 27,70			169 . 25 . 54,08	G.
	δ Ursæ Minoris...	280 . 40	1 . 11,1	11,4	9,8	6,1	8,8	9,6					280 . 41 . 9,42	G.

Runs and Coincidence at the middle wire taken Aug 22, 22ʰ.

(*a*) Close components.
(*b*) Indistinct.

(*c*) This is σ Cephei in A.S.C.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	49 . 12 . 46,35				1 . 7,58				87 . 1 . 2,21	+ 24,39	β Piscium.
	49 . 45 . 46,55				1 . 8,90				87 . 34 . 3,73	+ 24,74	γ Piscium.
	37 . 21 . 0,17	30,218	64,4	68,5	43,29	5,11		15 . 48,50	74 . 52 . 58,13		☉.
	36 . 49 . 24,88				42,48	5,04			59,10		☉.
	78 . 9 . 15,15		65,3	62,7	4 . 26,67	12,83	10,833	7,27	116 . 0 . 30,00		Mars.
32,20	- 34 . 22 . 21,68	30,224	63,0	58,3	39,61				3 . 24 . 6,99	+ 14,97	δ Ursæ Min. R.
	19,48								9,19		δ Ursæ Minoris.
30,36	13 . 33 . 54,53				13,98				51 . 21 . 16,79	+ 14,97	α Lyræ R.
	53,05								15,31		α Lyræ.
30,85	7 . 27 . 24,18		61,8	57,3	7,60				45 . 14 . 40,06	+ 17,69	δ Cygni R.
	23,68								39,56		δ Cygni.
	30 . 1 . 1,52				33,53				67 . 48 . 43,33	+ 17,00	∗Æ.19^{h}.47^{m}.29^{s}.
	30 . 6 . 25,85				33,65				67 . 54 . 7,78	+ 17,05	Σ 2600. *sp.*
	55 . 51 . 39,80	30,218	60,0	54,2	1 . 25,93	4,63			93 . 40 . 9,38		Juno.
29,51	66 . 47 . 56,68			53,8	2 . 15,52				104 . 37 . 20,48	+ 23,85	ι Aquarii R.
	53,50								17,30		ι Aquarii.
	37 . 57 . 23,77	30,014	64,0	71,1	43,73	5,18		15 . 48,80	75 . 29 . 21,80		☉.
	37 . 25 . 46,13				42,91	5,12			21,00		☉.
	78 . 13 . 14,95	29,964	66,0	66,8	4 . 23,66	12,64	10,817	7,17	116 . 4 . 27,08.		Mars.
32,45	- 34 . 22 . 22,30		65,2	62,1	38,98				3 . 24 . 7,00	+ 15,37	δ Ursæ Min. R.
	19,60								9,70		δ Ursæ Minoris.
30,86	13 . 33 . 54,14				13,76				51 . 21 . 16,18	+ 15,39	α Lyræ R.
	53,65								15,69		α Lyræ.
	30 . 10 . 43,67	29,960	63,1	58,5	33,38				67 . 58 . 25,33	+ 17,43	∗Æ. 19^{h}.47^{m}.58^{s}.
30,38	65 . 9 . 53,40			58,2	2 . 3,44				102 . 59 . 5,12	+ 15,26	α^1 Capricorni R.
	51,96								3,68		α^1 Capricorni.
30,34	65 . 12 . 9,17				2 . 3,65				103 . 1 . 21,10	+ 15,34	α^2 Capricorni R.
	7,65								19,58		α^2 Capricorni,
	56 . 8 . 40,08	29,950	61,0	56,3	1 . 25,71	4,66			93 . 57 . 9,41		Juno.
	78 . 14 . 53,29	29,900	65,8	63,4	4 . 25,55	12,54	9,383	7,93	116 . 6 . 22,51		Mars.
	55 . 35 . 31,79	29,914	64,0	61,6	1 . 22,97				93 . 24 . 3,04	+ 6,04	Σ 2296. *sp.*
	34 . 1 . 47,78				38,45				71 . 49 . 34,51	+ 11,96	∗Æ. 18^{h}.20^{m}.29^{s}.
	53 . 18 . 0,08				1 . 16,27				91 . 6 . 24,63	+ 8,00	*e* Serpentis.
30,52	13 . 33 . 54,79				13,75				51 . 21 . 16,82	+ 15,60	α Lyræ R.
	53,63								15,66		α Lyræ.
	78 . 17 . 4,78	30,000	66,4	66,4	4 . 25,61	12,45	10,859	7,60	116 . 8 . 18,62		Mars.
30,97	39 . 31 . 12,95	30,004	66,2	65,0	46,79				77 . 19 . 8,02	+ 7,02	α Ophiuchi R.
	12,68								7,75		α Ophiuchi.
	79 . 13 . 33,97	30,010	65,7	63,1	4 . 50,16				117 . 5 . 32,41	- 0,05	*g* Sagittarii.
	34 . 1 . 46,13				38,46				71 . 49 . 32,87	+ 12,10	∗Æ.18^{h}.20^{m}.29^{s}.
	53 . 17 . 58,87				1 . 16,28				91 . 6 . 23,43	+ 8,07	*e* Serpentis.
30,67	13 . 33 . 54,63				13,75				51 . 21 . 16,66	+ 15,81	α Lyræ R.
	53,77								15,80		α Lyræ.
31,51	65 . 9 . 51,89	30,014	64,8	61,9	2 . 2,74				102 . 59 . 2,91	+ 15,33	α^1 Capricorni R.
	52,71								3,73		α^1 Capricorni.
30,73	65 . 12 . 9,60				2 . 2,95				103 . 1 . 20,83	+ 15,40	α^2 Capricorni R.
	8,86								20,09		α^2 Capricorni.
	56 . 26 . 12,32	30,022	63,0	59,0	1 . 26,39	4,70			94 . 14 . 42,29		Juno.
31,88	- 8 . 11 . 12,07				8,27				29 . 35 . 47,94	+ 18,21	ν Cephei R.
	10,52								49,49		ν Cephei.
	38 . 22 . 1,80	30,092	65,0	67,5	44,81	5,23		15 . 49,40	76 . 25 . 39,06		☉.
	38 . 53 . 39,03				45,66	5,29			38,28		☉.
31,33	- 10 . 22 . 39,07	30,088	66,2	71,0	10,30				27 . 24 . 18,91	- 9,60	α Ursæ Maj. R.
	38,62								19,36		α Ursæ Majoris.
	78 . 18 . 42,43	30,096	68,0	70,1	4 . 25,06	12,35	9,433	7,27	116 . 10 . 10,69		Mars.
31,75	- 34 . 22 . 22,98	30,104	67,6	66,8	38,79				3 . 24 , 6,51	+ 16,07	δ Ursæ Min. R.
	21,68								7,81		δ Ursæ Minoris.

Coincidence of Micrometer Wire with fixed Wire = 10^{r},127, 10^{r},127, 10^{r},136, 10^{r},144, 10^{r},148 at the five wires. From Aug. 14 = 10^{r},117, 10^{r},121, 10^{r},130, 10^{r},139, 10^{r},144.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 1″,7. From Aug. 16 = − 1″,3.

Adopted Zenith Point = 315°. 3′. 31″,10.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Aug. 17	α Lyræ R. M.	121 . 25	3 . 24,2	24,0	20,8	19,8	19,7	22,4	6,497	+1 . 15,73			121 . 29 . 37,40	G.
	α Lyræ	328 . 35	2 . 26,0	25,8	23,3	19,9	23,3	23,7					328 . 37 . 23,57	G.
	⁎ Æ. 18ʰ. 58ᵐ. 30ˢ.	331 . 40	2 . 42,7	42,3	40,9	37,4	40,5	40,2					331 . 42 . 40,55	G.
	Juno	11 . 35	3 . 44,6	46,2	44,3	39,8	42,5	42,9			+2	− 0,25	11 . 38 . 42,97	G.
Aug. 18	(a) ☉ S.L. M.	354 . 15	2 . 23,1	25,0	23,7	19,8	25,8	21,9	13,038	−1 . 0,62			354 . 16 . 22,50	G.
	☉ N.L.	353 . 40	4 . 46,7	48,2	46,8	42,0	46,9	43,1					353 . 44 . 45,42	G.
	(b) Polaris SP. R. M.	174 . 20	2 . 22,4	22,4	18,1	18,9	21,0	20,8	12,426	− 47,87		+ 0,59	174 . 21 . 33,22	G.
	Polaris SP.	275 . 45	0 . 38,5	34,0	32,0	30,8	31,1	34,0				− 0,75	275 . 45 . 32,63	G.
	Mars S.L.	33 . 20	4 . 22,0	24,8	17,2	17,8	19,1	22,8			+2	− 0,34	33 . 24 . 20,09	G.
	⁎ Æ. 18ʰ. 20ᵐ. 29ˢ.	349 . 5	0 . 19,9	19,7	18,7	13,9	17,8	16,7					349 . 5 . 17,77	G.
	e Serpentis	8 . 20	1 . 33,9	33,5	30,3	29,0	31,9	30,3					8 . 21 . 31,42	G.
	α Lyræ R. M.	121 . 25	3 . 16,9	15,8	12,3	10,3	11,0	13,9	6,090	+1 . 24,21			121 . 29 . 37,44	G.
	α Lyræ	328 . 35	2 . 27,5	26,6	23,0	20,5	24,3	23,7					328 . 37 . 24,17	G.
	π Sagittarii R. M.	61 . 35	2 . 18,6	19,4	14,1	12,9	15,2	17,1	8,335	+ 37,41			61 . 37 . 53,53	G.
	π Sagittarii	28 . 25	4 . 10,4	12,1	8,0	5,3	7,9	9,0					28 . 29 . 8,60	G.
	⁎ Æ. 19ʰ. 47ᵐ. 58ˢ.	345 . 10	4 . 17,0	15,8	13,7	9,9	15,4	14,3					345 . 14 . 14,17	G.
	α Cephei R. M.	144 . 40	4 . 23,0	20,4	21,0	15,1	19,3	21,0	4,849	+1 . 50,08			144 . 46 . 9,86	G.
	α Cephei	305 . 20	0 . 59,1	56,8	55,9	51,4	53,5	54,9					305 . 20 . 55,23	G.
	Juno	11 . 45	2 . 51,1	50,0	48,1	43,1	46,8	48,0					11 . 47 . 47,73	G.
	A¹ Tauri	345 . 35	1 . 51,8	47,1	48,9	45,0	50,3	47,8					345 . 36 . 48,40	G.
	☽ N.L. M.	343 . 55	2 . 48,2	43,9	44,2	40,1	43,1	42,8	10,671	− 11,54	−2	− 1,45	343 . 57 . 30,61	G.
	☽ N.L. M.	...	....	...	...	...	...	...	10,748	− 13,08	−1	− 0,78	29,74	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,785	− 13,65			29,95	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,818	− 14,16	+1	+ 0,92	30,36	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,868	− 15,09	+2	+ 1,95	30,46	G.
	(c) Aldebaran R. M.	99 . 0	2 . 22,5	19,7	18,0	14,0	16,0	16,6	8,665	+ 30,53			99 . 2 . 48,23	G.
	Aldebaran	351 . 0	4 . 19,2	16,0	16,3	11,1	14,8	14,9					351 . 4 . 15,20	G.
Aug. 19	☉ N.L. M.	354 . 0	4 . 20,5	22,7	20,2	18,1	23,2	19,1	10,650	− 10,84			354 . 4 . 9,61	G.
	☉ S.L.	354 . 35	0 . 47,0	47,9	46,0	43,0	47,5	43,9					354 . 35 . 45,85	G.
	α Herculis R. M.	97 . 25	0 . 44,0	43,0	38,2	38,8	38,8	40,5	9,430	+ 14,59			97 . 25 . 55,11	G.
	α Herculis	352 . 40	1 . 8,9	9,4	6,0	2,2	6,4	4,9					352 . 41 . 6,25	G.
	α Equulei R. M.	87 . 25	1 . 14,2	11,4	10,1	6,7	7,8	9,9	4,240	+2 . 2,78			87 . 28 . 12,75	G.
	α Equulei	2 . 35	3 . 54,7	54,9	52,6	49,6	51,3	53,1					2 . 38 . 52,53	G.
	α Cephei R. M.	144 . 45	0 . 47,0	46,0	43,6	39,8	43,1	42,4	8,867	+ 26,32			144 . 46 . 9,94	G.
	α Cephei	305 . 20	0 . 58,5	56,0	55,5	51,5	52,8	53,0					305 . 20 . 54,52	G.
	Juno	11 . 55	1 . 63,2	63,0	61,0	56,0	59,7	59,7					11 . 57 . 0,35	G.
Aug. 21	☉ N.L. M.	354 . 40	4 . 11,5	10,0	11,7	5,1	8,3	8,0	11,757	− 33,92			354 . 43 . 35,00	G.
	☉ S.L.	355 . 15	0 . 17,0	15,3	15,4	11,0	13,6	12,5					355 . 15 . 14,12	G.
	(d) Mars N.L.	33 . 25	4 . 18,9	19,4	15,9	12,0	14,0	17,4					33 . 29 . 16,08	G.
	e Serpentis	8 . 20	1 . 32,0	30,0	30,0	25,8	28,4	27,8					8 . 21 . 28,93	G.
	α Lyræ R. M.	121 . 25	3 . 21,0	21,0	18,1	15,1	14,1	17,1	6,208	+1 . 21,75			121 . 29 . 39,33	G.
	α Lyræ	328 . 35	2 . 28,5	24,6	25,3	19,2	21,9	23,5					328 . 37 . 23,73	G.
	ζ Cygni R. M.	112 . 25	1 . 28,0	26,8	25,0	22,0	21,9	24,4	9,608	+ 10,88			112 . 26 . 35,50	G.
	ζ Cygni	337 . 40	0 . 31,4	27,1	30,0	23,6	24,8	26,4					337 . 40 . 27,20	G.
	α Cephei R. M.	144 . 45	1 . 23,7	21,5	20,5	16,8	17,1	20,4	10,622	− 10,26			144 . 46 . 9,67	G.
	α Cephei	305 . 20	0 . 59,1	55,1	56,9	51,1	51,0	53,6					305 . 20 . 54,43	G.
	Juno	12 . 15	0 . 45,4	42,8	42,6	37,3	39,4	40,9					12 . 15 . 41,37	G.
Aug. 23	(e) ☉ N.L. M.	355 . 20	4 . 14,8	14,0	15,0	9,8	13,9	12,4	11,350	− 25,43			355 . 23 . 47,70	G.
	☉ S.L.	355 . 55	0 . 29,3	28,0	28,7	23,6	26,9	25,0					355 . 55 . 26,90	G.
Aug. 24	Mars S.L.	33 . 30	4 . 23,5	23,1	20,7	19,0	20,0	22,1					33 . 34 . 21,22	G.
	(f) Σ 2402	356 . 45	0 . 12,1	9,3	10,0	7,0	8,8	8,8					356 . 45 . 9,33	G.
	⁎ Æ. 18ʰ. 42ᵐ. 36ˢ. M.	...	...	...	...	...	...	...	89,317	+3 . 45,39			356 . 48 . 54,72	G.
	Juno	12 . 40	4 . 26,5	25,2	25,6	20,6	23,4	25,1					12 . 44 . 24,22	G.
	ε Pegasi R. M.	91 . 55	4 . 26,5	23,1	22,0	18,9	20,9	22,9	4,181	+2 . 4,00			92 . 1 . 26,20	G.
	ε Pegasi	358 . 5	0 . 39,3	36,2	36,5	34,1	35,9	36,7					358 . 5 . 36,42	G.

Aug. 18, 3^h. Molyneux fast on Hardy, $1^m . 34^s$.

(a) Very badly defined.
(b) Times by Molyneux, $13^h . 7^m . 44^s$ and $13^h . 8^m . 10^s$.
(c) Unsteady.
(d) Much clouded.
(e) Clouded; but pretty good observation.
(f) Not seen double.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
30,49	13 . 33 . 53,70				13,69				51 . 21 . 15,67	+ 16,02	α Lyræ R.
	52,47								14,44		α Lyræ.
	16 . 39 . 9,45				16,97				54 . 26 . 34,70	+ 17,02	∗Æ.$18^h.58^m.30^s$.
	56 . 35 . 11,87		65,8	62,8	1 . 26,40	4,71			94 . 23 . 41,90		Juno.
	39 . 12 . 50,90	30,058	68,2	76,2	45,35	5,33		15 . 49,60	76 . 44 . 49,60		☉.
	38 . 41 . 13,82				44,51	5,27			50,94		☉.
32,93	− 39 . 18 . 1,62	30,014	71,2	79,2	45,16				− 1 . 31 . 38,50	+ 4,07	Polaris SP. R.
	17 . 58,97								35,85		Polaris SP.
	78 . 20 . 48,49	29,984	69,3	71,1	4 . 24,31	12,26	10,868	7,55	116 . 12 . 1,27		Mars.
	34 . 1 . 46,17		68,8	66,3	38,18				71 . 49 . 32,63	+ 12,37	∗Æ.$18^h.20^m.29^s$.
	53 . 17 . 59,82				1 . 15,73				91 . 6 . 23,83	+ 8,21	e Serpentis.
30,81	13 . 33 . 54,16				13,65				51 . 21 . 16,09	+ 16,23	α Lyræ R.
	52,57								14,50		α Lyræ.
31,07	73 . 25 . 38,07	29,988	67,8	63,9	38,45				111 . 15 . 54,80	+ 6,85	π Sagittarii R.
	37,00								53,73		π Sagittarii.
	30 . 10 . 42,57		67,0	62,7	33,13				67 . 58 . 23,90	+ 18,24	∗Æ.$19^h.47^m.58^s$.
32,54	− 9 . 42 . 38,26	29,972	64,0	59,5	9,81				28 . 4 . 20,21	+ 19,27	α Cephei R.
	36,37								22,10		α Cephei.
	56 . 44 . 16,13				1 . 27,15	4,72			94 . 32 . 46,84		Juno.
	30 . 33 . 16,80	29,876	64,2	57,8	33,84				68 . 20 . 58,92	+ 9,69	A¹ Tauri.
	28 . 53 . 59,01	29,870	63,4	59,5					66 . 30 . 13,33		☽.
	58,14								12,46		☽.
	58,35				31,53	26 . 27,72		15 . 2,23	12,67		☽.
	58,76								13,08		☽.
	58,86								13,18		☽.
31,72	36 . 0 . 43,37				41,50				73 . 48 . 33,15	+ 9,25	Aldebaran R.
	43,60								33,38		Aldebaran.
	39 . 0 . 38,01	29,808	72,0	81,1	44,23	5,31		15 . 49,80	77 . 4 . 15,01		☉.
	32 . 14,25				45,07	5,37			12,43		☉.
30,68	37 . 37 . 36,49	29,738	71,0	70,2	42,89				75 . 25 . 27,66	+ 6,24	α Herculis R.
	34,65								25,82		α Herculis.
32,64	47 . 35 . 18,85	29,668	65,0	60,2	1 . 1,94				85 . 23 . 29,07	+ 21,37	α Equulei R.
	20,93								31,15		α Equulei.
32,23	− 9 . 42 . 38,34				9,70				28 . 4 . 20,24	+ 19,63	α Cephei R.
	37,08								21,50		α Cephei.
	56 . 53 . 28,75				1 . 26,65	4,74			94 . 41 . 58,94		Juno.
	39 . 40 . 3,40	29,948	63,8	61,9	47,24	5,38		15 . 50,20	77 . 43 . 43,74		☉.
	40 . 11 . 42,52				48,13	5,44			43,29		☉.
	78 . 25 . 44,48	29,854	63,0	57,5	4 . 32,50	11,98	9,490	6,67	116 . 17 . 19,95		Mars.
	53 . 17 . 57,33	29,846	61,2	55,0	1 . 17,12				91 . 6 . 22,73	+ 8,43	e Serpentis.
31,53	13 . 33 . 52,27				13,90				51 . 21 . 14,45	+ 16,78	α Lyræ R.
	52,13								14,31		α Lyræ.
31,35	22 . 36 . 56,10	29,800	58,2	53,4	24,04				60 . 24 . 28,42	+ 21,99	ζ Cygni R.
	55,60								27,92		ζ Cygni.
32,05	− 9 . 42 . 38,07				9,87				28 . 4 . 20,34	+ 20,33	α Cephei R.
	37,17								21,24		α Cephei.
	57 . 12 . 9,77				1 . 29,29	4,76			95 . 0 . 42,58		Juno.
	40 . 20 . 16,10	29,582	63,7	65,8	47,41	5,46		15 . 50,60	78 . 23 . 56,93		☉.
	40 . 51 . 55,30				48,30	5,52			55,76		☉.
	78 . 30 . 49,62	29,786	61,7	59,3	4 . 32,80	11,72	10,770	6,67	116 . 22 . 12,31		Mars.
	41 . 41 . 37,73	29,812	60,4	55,7	51,14				79 . 29 . 37,15	+ 13,07	Σ 2402.
	41 . 45 . 23,12				51,25				79 . 33 . 22,65	+ 13,08	∗Æ.$18^h.42^m.36^s$.
	57 . 40 . 52,62	29,824	59,5	55,6	1 . 30,61	4,79			95 . 29 . 26,72		Juno.
31,31	43 . 2 . 5,40				53,63				80 . 50 . 7,31	+ 23,48	ε Pegasi R.
	4,82								6,73		ε Pegasi.

Coincidence of Micrometer Wire with fixed Wire = $10^r,117$, $10^r,121$, $10^r,130$, $10^r,139$, $10^r,144$ at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = − 1″,3.
Adopted Zenith Point = 315° . 3′ . 31″,10. From Aug. 18 = 315° . 3′ . 31″,60.
Assumed Colatitude = 37° . 47′ . 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Aug. 25	(a) α Cygni R. M.	127 . 30	3 . 10,3	7,1	5,3	2,7	4,3	4,1	6,117	+1 . 23,65			127 . 34 . 29,15	G.
	α Cygni	322 . 30	2 . 37,7	33,4	32,1	28,9	31,3	32,9					322 . 32 . 32,60	G.
	(a) η Cephei R. M.	144 . 0	4 . 17,8	17,2	15,0	11,7	13,8	14,9	8,729	+ 29,20			144 . 4 . 44,08	G.
	η Cephei	306 . 0	2 . 25,1	21,0	19,8	16,8	18,4	20,8					306 . 2 . 20,22	G.
Aug. 26	☉ S.L. M.	356 . 55	3 . 29,9	28,0	27,5	23,7	27,5	27,5	13,810	−1 . 16,71			356 . 57 . 10,49	G.
	☉ N.L.	356 . 25	0 . 31,1	30,0	29,1	26,1	29,0	27,9					356 . 25 . 28,85	G.
	Mars S.L.	33 . 35	2 . 14,6	16,0	10,8	8,7	11,2	12,7			+2	− 0,33	33 . 37 . 11,90	C.
	δ Cygni R. M.	127 . 35	0 . 26,6	23,1	22,3	19,0	19,8	22,7	7,804	+ 48,49			127 . 36 . 10,72	G.
	δ Cygni	322 . 30	0 . 56,2	52,2	52,4	48,8	49,9	52,0					322 . 30 . 51,88	G.
	α Cygni R. M.	127 . 30	3 . 27,1	24,5	23,7	19,8	21,2	23,5	6,932	+1 . 6,66			127 . 34 . 29,81	G.
	α Cygni	322 . 30	2 . 38,1	33,7	33,7	28,6	31,3	33,4					322 . 32 . 33,02	G.
	Juno	13 . 0	3 . 53,0	49,8	51,4	43,8	48,1	48,3					13 . 3 . 48,90	G.
Aug. 29	Mars N.L.	33 . 40	0 . 44,1	44,9	39,0	37,9	41,4	40,3					33 . 40 . 41,18	G.
Aug. 30	(b) ☉ S.L. M.	358 . 20	2 . 26,1	25,0	24,0	19,9	23,4	23,4	11,964	− 38,23			358 . 21 . 45,12	G.
	☉ N.L.	357 . 45	4 . 65,1	62,5	62,8	58,1	62,6	60,0					357 . 50 . 1,25	G.
Aug. 31	(c) ☽ N.L. M.	30 . 40	0 . 41,0	42,1	36,1	35,3	39,3	37,4	10,719	− 12,47	−2	+ 2,57	30 . 40 . 28,57	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,732	− 12,66	−1	+ 1,35	27,16	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,718	− 12,17			26,30	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,640	− 10,37	+1	− 1,49	26,61	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,451	− 6,31	+2	− 3,11	29,05	G.
	η Draconis R. M.	144 . 40	2 . 22,0	19,2	17,1	16,3	17,3	19,8	8,223	+ 39,83			144 . 42 . 58,16	G.
	η Draconis	305 . 20	4 . 9,5	5,8	8,0	1,5	6,0	3,9					305 . 24 . 5,30	G.
	(d) α Ophiuchi R.	95 . 30	2 . 25,9	23,8	19,5	19,0	20,8	22,7					95 . 32 . 21,67	G.
	α Ophiuchi	354 . 30	4 . 43,1	44,3	42,0	38,6	42,3	41,1					354 . 34 . 41,33	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 31,1	29,0	26,8	24,3	28,2	27,0	11,630	− 31,19			169 . 25 . 56,38	G.
	δ Ursæ Minoris	280 . 40	1 . 11,1	9,7	7,3	3,9	6,2	6,1					280 . 41 . 7,25	G.
	α Lyræ R. M.	121 . 25	3 . 26,6	25,0	21,2	19,3	20,0	22,4	6,388	+1 . 18,08			121 . 29 . 40,10	G.
	α Lyræ	328 . 35	2 . 25,9	24,0	20,3	18,3	21,1	21,1					328 . 37 . 21,50	G.
	(e) Σ 2402	356 . 45	0 . 11,1	9,1	9,0	5,2	8,7	7,4					356 . 45 . 8,40	G.
	⁎ Æ.18ʰ.42ᵐ.36ˢ. M.	...	...	...	...	...	...	...	89,327	+3 . 45,27			356 . 48 . 53,67	G.
Sept. 1	(f) Arcturus R.	102 . 50	1 . 22,1	17,4	16,0	15,1	14,7	16,1					102 . 51 . 16,75	G.
	Arcturus	347 . 15	0 . 45,9	44,4	42,1	41,0	43,6	42,8					347 . 15 . 43,22	G.
	(g) η Draconis R. M.	144 . 40	2 . 18,0	14,0	13,0	11,1	13,8	14,4	8,009	+ 44,29			144 . 42 . 58,07	G.
	η Draconis	305 . 20	4 . 9,4	5,4	7,0	1,3	7,1	3,5					305 . 24 . 5,13	G.
	(h) ☽ N.L. M.	31 . 45	2 . 45,8	46,6	40,3	42,1	43,9	44,6	8,527	+ 33,22	−2	+ 0,18	31 . 48 . 16,95	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,480	+ 34,28	−1	+ 0,16	17,99	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,480	+ 34,47			18,02	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,470	+ 34,87	+1	− 0,30	18,12	G.
	☽ N.L M.	...	...	...	...	...	...	...	8,470	+ 34,98	+2	− 0,74	17,79	G.
	(i) Mars N.L.	33 . 40	3 . 39,8	41,0	34,2	35,0	37,7	37,5					33 . 43 . 37,10	G.
	(k) Σ 2651	351 . 30	3 . 66,0	65,8	63,9	59,2	63,8	62,1					351 . 34 . 2,98	G.
	ε Aquarii R. M.	72 . 45	3 . 28,5	26,9	23,0	21,3	23,5	26,1	8,985	+ 23,94			72 . 48 . 48,42	G.
	ε Aquarii	17 . 15	3 . 16,8	17,1	12,4	10,4	12,7	13,7					17 . 18 . 13,47	G.
	61¹ Cygni R. M.	120 . 45	4 . 15,0	13,2	10,5	7,8	8,4	11,0	7,227	+1 . 0,60			120 . 50 . 11,08	G.
	61¹ Cygni	329 . 15	1 . 54,0	52,1	50,0	46,5	49,0	48,9					329 . 16 . 49,87	G.
	(g) Juno	14 . 0	2 . 64,9	64,0	61,0	58,3	61,9	61,2			+2	− 0,30	14 . 3 . 1,22	G.
Sept. 2	☉ S.L. M.	359 . 25	2 . 24,7	25,2	22,0	18,9	23,3	20,8	12,027	− 39,46			359 . 26 . 42,74	G.
	☉ N.L.	358 . 50	4 . 60,5	62,0	60,7	56,0	60,1	58,0					358 . 54 . 58,95	G.
	θ Ophiuchi	32 . 0	2 . 40,1	41,9	35,0	37,1	38,7	39,1					32 . 2 . 38,33	G.
	Mars S.L.	33 . 40	4 . 39,1	39,9	34,2	33,3	36,5	36,2					33 . 44 . 35,98	G.
	(l) ☽ S.L. M.	31 . 50	3 . 15,4	16,0	10,9	9,8	12,2	13,1	9,565	+ 11,59	−2	− 2,07	31 . 53 . 22,04	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,634	+ 10,24	−1	− 0,97	21,79	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,730	+ 8,42			20,94	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,792	+ 7,31	+1	+ 0,83	20,66	G.
	☽ S.L. M.	...	...	...	...	...	...	...	9,810	+ 7,05	+2	+ 1,53	21,10	G.

Runs taken Sept. 1, 21½ʰ.
Coincidences at the five wires taken Sept. 4, 23ʰ.

(a) Much clouded. (b) Very cloudy. (c) Exceedingly faint. (d) Accidentally on the fixed wire. (e) Not seen double. (f) On fixed wire: not well bisected. (g) Faint. (h) Exceedingly faint from clouds. The micrometer readings have been diminished by 1ʳ. (i) Cloudy. (k) Seemed a close double star: observed as single. (l) No correction required for defect of illumination.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
30,88	7 . 29 . 2,45	29,876	62,4	59,6	7,51				45 . 16 . 18,24	+ 22,41	α Cygni R.
	1,00								16,79		α Cygni.
32,15	− 9 . 1 . 12,48				9.07				28 . 45 . 46,73	+ 22,82	η Cephei R.
	11,38								47,83		η Cephei.
	41 . 53 . 38,89	29,906	63,8	65,6	50,64	5,64		15 . 51,20	79 . 25 . 40,97		☉.
	41 . 21 . 57,25				49,71	5,58			40,86		☉.
	78 . 33 . 40,30	30,000	63,9	61,2	4 . 34,80	11,55	10,833	7,33	116 . 25 . 4,50		Mars.
31,30	7 . 27 . 20,88	30,050	59,6	54,5	7,60				45 . 14 . 36,76	+ 21,34	δ Cygni R.
	20,28								36,16		δ Cygni.
31,42	7 . 29 . 1,79	30,064	58,7	53,5	7,65				45 . 16 . 17,72	+ 22,69	α Cygni R.
	1,42								17,35		α Cygni.
	58 . 0 . 17,30		58,0	52,7	1 . 33,03	4,81			95 . 48 . 53,80		Juno.
	78 . 37 . 9,58	29,792	64,4	64,7	4 . 33,94	11,29	9,508	6,49	116 . 28 . 47,00		Mars.
	43 . 18 . 13,52	30,108	63,3	66,1	53,50	5,80		15 . 52,10	80 . 50 . 17,40		☉.
	42 . 46 . 29,65				52,53	5,74			16,82		☉.
	75 . 36 . 56,97	30,192	65,9	70,6					112 . 46 . 60,24		☽.
	55,56								58,83		☽.
	54,70				3 . 36,24	56 . 54,29		16 . 13,04	57,97		☽.
	55,01								58,28		☽
	57,45								60,72		☽.
31,73	− 9 . 39 . 26,56				9,61				28 . 7 . 32,11	+ 11,43	η Draconis R.
	26,30								32,37		η Draconis.
31,50	39 . 31 . 9,93	30,208	65,8	67,0	46,91				77 . 19 . 5,12	+ 8,12	α Ophiuchi R.
	9,73								4,92		α Ophiuchi.
31,82	− 34 . 22 . 24,78	30,212	65,5	64,8	39,09				3 . 24 . 4,41	+ 18,67	δ Ursæ Min. R.
	24,35								4,84		δ Ursæ Minoris.
30,80	13 . 33 . 51,50				13,80				51 . 21 . 13,58	+ 18,40	α Lyræ R.
	49,90								11,98		α Lyræ.
	41 . 41 . 36,80				50,88				79 . 29 . 35,96	+ 13,73	Σ 2402.
	41 . 45 . 22,07				50,99				79 . 33 . 21,34	+ 13,73	⁎ Æ.18h.42m.36s.
27,99	32 . 12 . 14,85	30,292	68,2	74,5	35,41				69 . 59 . 58,54	− 6,52	Arcturus R.
	11,62								55,31		Arcturus.
31,60	− 9 . 39 . 26,47	30,294	69,7	73,0	9,60				28 . 7 . 32,21	+ 11,39	η Draconis R.
	26,47								32,21		η Draconis.
	76 . 44 . 45,35		69,2	71,5					113 . 54 . 55,32		☽.
	46,39								56,36		☽.
	46,42				3 . 55,09	56 . 50,74		15 . 57,34	56,39		☽.
	46,52								56,49		☽.
	46,19								56,16		☽.
	78 . 40 . 5,50			69,8	4 . 35,14	11,05	9,505	6,56	116 . 31 . 44,43		Mars.
	36 . 30 . 31,38		66,3	64,2	42,46				74 . 18 . 22,12	+ 20,81	Σ 2651.
30,95	62 . 14 . 43,18			63,0	1 . 48,85				100 . 3 . 40,31	+ 18,80	ε Aquarii R.
	41,87								39,00		ε Aquarii.
30,48	14 . 13 . 20,52			62,7	14,59				52 . 0 . 43,39	+ 26,86	61¹ Cygni R.
	18,27								41,14		61¹ Cygni.
	58 . 59 . 29,62				1 . 35,46	4,84			96 . 48 . 8,52		Juno.
	44 . 23 . 11,14	30,336	68,3	71,8	55,36	5,92		15 . 52,90	81 . 55 . 15,96		☉.
	43 . 51 . 27,35				54,35	5,86			17,02		☉.
	76 . 59 . 6,73	30,300	68,0	69,0	4 . 0,61				114 . 50 . 15,62	− 5,53	θ Ophiuchi.
	78 . 41 . 4,38				4 . 36,02	10,97	10,784	6,78	116 . 32 . 30,93		Mars.
	76 . 49 . 50,44			67,1					113 . 29 . 22,06		☽.
	50,19								21,81		☽.
	49,34				3 . 58,73	55 . 54,26		15 . 41,13	20,96		☽.
	49,06								20,68		☽.
	49,50								21,12		☽.

Coincidence of Micrometer Wire with fixed Wire = 10r,117, 10r,121, 10r,130, 10r,139, 10r,144 at the five wires. From Aug. 31 = 10r,121, 10r,125, 10r,134, 10r,143, 10r,148.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 1″,3. From Aug. 29 = − 3″,6.

Adopted Zenith Point = 315°. 3′. 31″,60.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Sept. 2	λ Sagittarii........	32 . 40	2 . 17,7	17,2	12,3	11,6	14,5	13,8					32 . 42 . 14,25	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 40,6	36,1	36,0	32,9	36,9	36,1	11,904	− 36,89			169 . 25 . 59,34	G.
	δ Ursæ Minoris...	280 . 40	1 . 11,9	8,1	6,9	3,9	6,2	6,8					280 . 41 . 7,17	G.
	α Lyræ R. M.....	121 . 25	3 . 20,1	18,0	14,9	12,9	13,9	15,0	6,026	+ 1 . 25,63			121 . 29 . 41,05	G.
	α Lyræ...........	328 . 35	2 . 26,0	23,0	20,8	17,4	21,1	20,2					328 . 37 . 21,13	G.
	φ Sagittarii.......	34 . 20	0 . 15,4	15,1	9,4	8,5	10,2	11,0					34 . 20 . 11,58	G.
	(a) Σ 2402...........	356 . 45	0 . 13,8	11,5	10,7	7,1	11,5	9,1					356 . 45 . 10,60	G.
	✱ Æ. 18h.42m.36s.M.	...	...	...	...	...	...	...	89,300	+ 3 . 45,83			356 . 48 . 56,43	G.
	ο Draconis R. M...	142 . 0	2 . 17,5	14,1	14,0	10,0	13,1	13,0	8,500	+ 34,06			142 . 2 . 47,41	G.
	ο Draconis........	308 . 0	4 . 20,8	16,9	16,7	11,0	14,8	15,3					308 . 4 . 15,40	G.
	Σ 2437............	348 . 15	3 . 37,1	34,0	32,9	28,1	33,3	32,9					348 . 18 . 32,63	G.
	✱ Æ. 18h.55m.4s.M.	...	...	...	...	...	...	...	2,220	+ 2 . 44,96			348 . 21 . 17,59	G.
	✱ Æ. 18h.58m.30s.	331 . 40	2 . 41,4	39,0	37,9	34,0	37,9	36,1					331 . 42 . 37,40	G.
	(b) Juno............	14 . 10	2 . 58,2	55,6	53,1	51,7	53,0	53,2					14 . 12 . 53,78	G.
Sept. 4	(c) ☉ S.L. M.........	0 . 10	1 . 30,0	32,1	27,0	26,1	28,1	27,2	12,418	− 47,61			0 . 10 . 40,62	G.
	☉ N.L...........	359 . 35	3 . 57,9	57,9	55,3	51,8	54,8	54,1					359 . 38 . 54,83	G.
	(d) α Ophiuchi R. M..	95 . 30	3 . 28,3	23,5	22,9	19,1	21,1	23,2	12,990	− 59,54			95 . 32 . 23,08	G.
	α Ophiuchi.......	354 . 30	4 . 46,3	42,9	44,5	38,9	41,9	42,7					354 . 34 . 42,30	G.
	Mars S.L.........	33 . 45	0 . 45,7	42,3	39,9	37,1	39,0	40,2					33 . 45 . 40,62	G.
	ι Herculis R. M...	128 . 55	1 . 36,0	30,9	30,4	26,0	28,1	29,4	9,808	+ 6,80			128 . 56 . 36,75	G.
	ι Herculis........	321 . 10	0 . 31,9	27,1	25,6	21,9	25,5	24,9					321 . 10 . 26,10	G.
	ξ Draconis R. M. .	139 . 45	0 . 34,6	31,0	29,3	26,0	27,9	28,4	11,959	− 38,03			139 . 44 . 51,44	G.
	ξ Draconis........	310 . 20	2 . 19,3	14,4	15,0	9,8	12,0	12,2					310 . 22 . 13,52	G.
	ρ¹ Sagittarii.......	25 . 20	1 . 48,9	45,2	45,4	40,3	43,3	43,7					25 . 21 . 44,27	G.
	e² Sagittarii.......	23 . 40	2 . 56,9	54,9	54,8	48,8	51,8	53,9					23 . 42 . 53,17	G.
	☽ S.L. M..........	27 . 0	0 . 7,9	5,4	2,4	0,4	2,2	3,2	10,630	− 10,61	−2	− 5,35	26 . 59 . 47,62	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,705	− 12,09	−1	− 2,62	48,87	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,849	− 14,90			48,68	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,958	− 16,99	+1	+ 2,52	49,11	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	11,075	− 19,33	+2	+ 4,93	49,18	G.
	α¹ Capricorni R. M.	69 . 50	2 . 24,5	18,9	17,1	13,9	15,0	19,0	6,050	+ 1 . 24,86	−2	+ 0,14	69 . 53 . 42,78	G.
	α¹ Capricorni.....	20 . 10	3 . 24,8	21,9	20,0	16,9	17,8	21,3			+2	− 0,14	20 . 13 . 19,91	G.
	α² Capricorni R. M.	69 . 50	2 . 24,5	18,9	17,1	13,9	15,0	19,0	12,574	− 51,13	−2	+ 0,14	69 . 51 . 26,79	G.
	α² Capricorni......	20 . 10	3 . 24,8	21,9	20,0	16,9	17,8	21,3	3,634	+ 2 . 15,77	+2	− 0,14	20 . 15 . 35,68	G.
	υ Capricorni......	25 . 50	4 . 35,4	32,1	31,0	26,6	28,3	31,7					25 . 54 . 30,32	G.
	Juno.............	14 . 30	2 . 41,8	38,6	38,0	33,0	34,9	36,4					14 . 32 . 36,80	G.
Sept. 5	(e) ☉ N.L. M........	0 . 0	1 . 28,6	26,0	26,6	21,5	25,9	23,9	11,079	− 19,69			0 . 1 . 5,56	G.
	☉ S.L.	0 . 30	2 . 53,6	51,0	51,1	46,5	50,4	48,3					0 . 32 . 49,82	G.
	Mars N.L.........	33 . 45	0 . 58,5	58,2	53,8	52,4	53,2	54,1					33 . 45 . 54,92	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 15,0	13,0	11,4	8,7	10,7	10,6	10,840	− 14,72			169 . 25 . 56,70	G.
	δ Ursæ Minoris...	280 . 40	1 . 12,6	11,0	9,1	4,8	6,9	7,1					280 . 41 . 8,45	G.
	α Lyræ R. M.....	121 . 25	3 . 17,5	15,8	12,9	10,2	10,3	11,8	5,872	+ 1 . 28,84			121 . 29 . 41,54	G.
	α Lyræ..........	328 . 35	2 . 26,3	23,0	21,8	17,5	19,8	20,1					328 . 37 . 21,13	G.
	ο Draconis R. M...	142 . 0	2 . 27,2	24,3	24,4	19,2	22,8	23,6	8,940	+ 24,88			142 . 2 . 48,18	G.
	ο Draconis........	308 . 0	4 . 21,7	18,1	18,6	11,9	14,1	16,0					308 . 4 . 16,22	G.
	Σ 2437	348 . 15	3 . 36,7	33,6	33,3	26,9	31,8	32,1					348 . 18 . 31,98	G.
	✱ Æ. 18h.55m.4s.M.	...	...	...	...	...	...	...	2,200	+ 2 . 45,38			348 . 21 . 17,36	G.
	Σ 2482 M.........	348 . 20	0 . 31,0	28,0	28,0	22,1	25,5	26,8	3,511	+ 2 . 18,05			348 . 22 . 44,90	G.
	Σ 2484...........	348 . 25	2 . 33,5	30,1	30,6	24,1	28,5	29,0			+3	+ 0,46	348 . 27 . 29,46	G.
	ρ¹ Sagittarii.......	25 . 20	1 . 50,0	48,0	46,7	42,0	45,1	44,5					25 . 21 . 45,83	G.
	υ Capricorni......	25 . 50	4 . 35,0	33,3	31,5	26,3	29,9	31,5					25 . 54 . 30,72	G.
	☽ S.L. M..........	23 . 0	3 . 48,9	47,4	46,2	39,9	44,0	44,7	10,500	− 7,90	−2	− 6,27	23 . 3 . 30,56	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,660	− 11,15	−1	− 3,09	30,49	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,797	− 13,82			30,91	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,920	− 16,20	+1	+ 3,01	31,54	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	11,055	− 18,91	+2	+ 5,93	31,75	G.
	ν Aquarii.........	19 . 10	4 . 16,1	13,4	14,2	6,9	11,6	12,0					19 . 14 . 11,87	G.
	Juno	14 . 40	2 . 32,9	29,3	28,9	23,3	27,5	27,1					14 . 42 . 27,87	G.
	β Aquarii R. M...	76 . 35	1 . 18,3	16,1	14,5	11,3	12,0	13,3	7,598	+ 52,87			76 . 37 . 6,97	G.
	β Aquarii........	13 . 25	4 . 59,5	56,2	57,1	50,6	55,0	54,9					13 . 29 . 54,95	G.

(a) Not seen double. (b) Faint.
(c) Unsatisfactory from clouds.

(d) Indistinct.
(e) Very badly defined and unsteady.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	77 . 38 . 42,65	30,320	67,5	66,3	4 . 14,88				115 . 30 . 5,81	+ 0,87	λ Sagittarii.
33,26	– 34 . 22 . 27,74				39,11				3 . 24 . 1,43	+ 18,87	δ Ursæ Min. R.
	24,43								4,74		δ Ursæ Minoris.
31,09	13 . 33 . 50,55				13,80				51 . 21 . 12,63	+ 18,66	α Lyræ R. M.
	49,53								11,61		α Lyræ.
	79 . 16 . 39,98				4 . 52,59				117 . 8 . 40,85	+ 2,21	φ Sagittarii.
	41 . 41 . 39,00				50,91				79 . 29 . 38,19	+ 13,90	Σ 2402.
	41 . 45 . 24,83				51,03				79 . 33 . 24,14	+ 13,90	∗Æ.$18^h.42^m.36^s$.
31,41	– 6 . 59 . 15,81				7,01				30 . 47 . 45,46	+ 21,42	ο Draconis R.
	16,20								45,07		ο Draconis.
	33 . 15 . 1,03				37,49				71 . 2 . 46,80	+ 16,83	Σ 2437.
	33 . 17 . 45,99				37,56				71 . 5 . 31,83	+ 16,82	∗Æ.$18^h.55^m.4^s$.
	16 . 39 . 5,80				17,11				54 . 26 . 31,19	+ 19,96	∗Æ.$18^h.58^m.30^s$.
	59 . 9 . 22,18	30,310	66,0	61,4	1 . 36,37	4,85			96 . 58 . 1,98		Juno.
	45 . 7 . 9,02	30,270	63,4	62,4	57,73	6,00		15 . 53,40	82 . 39 . 15,63		☉.
	44 . 35 . 23,23				56,68	5,94			15,65		☉.
32,69	39 . 31 . 8,52	30,296	63,1	57,5	47,95				77 . 19 . 4,75	+ 8,32	α Ophiuchi R.
	10,70								6,93		α Ophiuchi.
	78 . 42 . 9,02				4 . 43,03	10,81	10,759	6,52	116 . 33 . 43,00		Mars.
31,43	6 . 6 . 54,85				6,23				43 . 54 . 9,36	+ 15,97	ι Herculis R.
	54,50								9,01		ι Herculis.
32,48	– 4 . 41 . 19,84				4,77				33 . 5 . 43,67	+ 18,13	ξ Draconis R.
	18,08								45,43		ξ Draconis.
	70 . 18 . 12,67	30,316	60,7	53,4	2 . 42,46				108 . 8 . 3,41	+ 8,78	ρ^1 Sagittarii.
	68 . 39 . 21,57			53,0	2 . 29,17				106 . 28 . 59,02	+ 11,35	e^2 Sagittarii.
	71 . 56 . 16,02	30,328	59,7	52,0					108 . 37 . 37,04		☽.
	17,27								38,29		☽.
	17,08				2 . 58,59	53 . 24,73		15 . 21,12	38,10		☽.
	17,51								38,53		☽.
	17,58								38,60		☽.
31,35	65 . 9 . 48,82		59,0	51,5	2 . 6,66				102 . 59 . 3,76	+ 15,63	α^1 Capricorni R.
	48,31								3,25		α^1 Capricorni.
31,24	65 . 12 . 4,81				2 . 6,88				103 . 1 . 19,97	+ 15,69	α^2 Capricorni R.
	4,08								19,24		α^2 Capricorni.
	70 . 50 . 58,72			51,0	2 . 48,27				108 . 40 . 55,27	+ 16,45	υ Capricorni.
	59 . 29 . 5,20				1 . 39,73	4,85			97 . 17 . 48,30		Juno.
	44 . 57 . 33,31	30,378	63,0	62,0	57.66	5,98		15 . 53,60	83 . 1 . 26,87		☉.
	45 . 29 . 17,57				58,73	6,04			24,94		☉.
	78 . 42 . 22,67	30,324	63,7	60,4	4 . 41,71	10,73	9,511	6,50	116 . 34 . 8,43		Mars.
32,58	– 34 . 22 . 24,45	30,336	62,4	57,0	39,86				3 . 24 . 3,97	+ 19,27	δ Ursæ Min. R.
	23,80								4,62		δ Ursæ Minoris.
31,34	13 . 33 . 50,71				14,07				51 . 21 . 13,06	+ 19,05	α Lyræ R.
	48,88								11,23		α Lyræ.
32,20	– 6 . 59 . 15,93				7,15				30 . 47 . 45,20	+ 21,93	ο Draconis R.
	16,03								45,10		ο Draconis.
	33 . 14 . 59,73				38,21				71 . 2 . 46,22	+ 17,13	Σ 2437.
	33 . 17 . 45,11				38,28				71 . 5 . 31,67	+ 17,13	∗Æ.$18^h.55^m.4^s$.
	33 . 19 . 12,65			55,7	38,42				71 . 6 . 59,35	+ 17,93	Σ 2482.
	33 . 23 . 57,21								71 . 11 . 44,02	+ 18,01	Σ 2484.
	70 . 18 . 13,58				2 . 41,81				108 . 8 . 3,67	+ 8,77	ρ^1 Sagittarii.
	70 . 50 . 58,47	30,308	60,0	53,5	2 . 47,30				108 . 40 . 54,05	+ 16,41	υ Capricorni.
	67 . 59 . 58,31								104 . 42 . 43,49		☽.
	58,24								43,42		☽.
	58,66				2 . 24,16	51 . 34,82		15 . 12,44	43,84		☽.
	59,29								44,47		☽.
	59,50								44,68		☽.
	64 . 10 . 39,62	30,300	59,4	53,0	2 . 0,72				101 . 59 . 48,62	+ 20,31	ν Aquarii.
	59 . 38 . 55,62				1 . 39,93	4,85			97 . 27 . 38,98		Juno.
30,96	58 . 26 . 25,28			55,0	1 . 34,90				96 . 15 . 8,46	+ 22,86	β Aquarii R.
	22,70								5,88		β Aquarii.

Coincidence of Micrometer Wire with fixed Wire = 10^r,121, 10^r,125, 10^r,134, 10^r,143, 10^r,148 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = – 3″,6.
Adopted Zenith Point = 315° . 3′ . 31″,60. From Sept. 5 = 315° . 3′ . 32″,25.
Assumed Co-latitude = 37° . 47′ . 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Sept. 5	(a) α Ursæ Maj. R. M.	145 . 25	1 . 30,0	25,2	25,0	20,9	24,0	25,2	11,019	− 18,73	−2	− 1,16	145 . 26 . 4,99	G.
	α Ursæ Majoris...	304 . 40	0 . 65,0	64,0	62,4	57,4	62,3	59,3			−1	+ 0,29	304 . 41 . 1,91	G.
Sept. 6	(b) ⊙ S.L. M.........	0 . 55	1 . 28,0	27,6	25,3	20,9	25,2	23,0	13,800	− 1 . 16,42			0 . 55 . 8,41	G.
	⊙ N.L.	0 . 20	3 . 25,9	24,6	23,6	20,0	22,8	21,7					0 . 23 . 22,70	G.
	(c) Polaris SP. R. M.	174 . 20	2 . 22,4	18,3	19,5	14,2	18,6	17,9	12,608	− 51,57			174 . 21 . 26,63	G.
	Polaris SP........	275 . 45	0 . 44,5	43,0	40,9	36,5	40,7	38,8					275 . 45 . 40,67	G.
	Mars S.L.........	33 . 45	1 . 33,1	32,4	26,8	28,0	28,8	30,0			+3	− 0,69	33 . 46 . 28,98	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 22,7	19,8	18,1	14,9	18,0	18,1	11,121	− 20,58			169 . 25 . 57,87	G.
	δ Ursæ Minoris...	280 . 40	1 . 11,3	9,4	8,0	2,9	6,2	6,1					280 . 41 . 7,18	G.
	α Lyræ R. M.	121 . 25	3 . 23,0	21,0	17,9	16,9	16,1	18,1	6,128	+ 1 . 23,51			121 . 29 . 41,94	G.
	α Lyræ..........	328 . 35	2 . 26,7	23,9	20,8	18,0	21,1	21,0					328 . 37 . 21,63	G.
	ο Draconis R. M. .	142 . 0	1 . 55,9	52,9	51,9	48,9	50,9	51,9	7,432	+ 56,32			142 . 2 . 48,17	G.
	ο Draconis........	308 . 0	4 . 20,5	18,0	16,7	11,9	15,1	15,3					308 . 4 . 15,73	G.
	(d) π Sagittarii R. M..	61 . 35	2 . 41,4	40,0	35,7	34,3	36,9	38,0	9,243	+ 18,58			61 . 37 . 55,98	G.
	π Sagittarii.......	28 . 25	4 . 12,9	12,0	8,8	5,9	7,5	8,7					28 . 29 . 8,80	G.
	⁎ Æ. 19ʰ. 5ᵐ. 34ˢ..	348 . 15	3 . 35,3	31,6	31,8	25,9	32,4	31,1					348 . 18 . 30,93	G.
	(e) Σ 2490..........	10 . 55	4 . 50,3	49,0	48,4	43,5	48,0	47,0					10 . 59 . 47,12	G.
	Juno	14 . 50	2 . 21,4	20,0	17,7	14,9	17,6	17,5			+2	− 0,31	14 . 52 . 17,59	G.
	(f) ☽ S.L. M.........	18 . 25	4 . 52,0	51,0	50,9	45,0	48,3	40,8	10,771	− 13,29			18 . 29 . 34,13	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,937	− 16,55	+1	+ 3,30	34,17	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,070	− 19,22	+2	+ 6,54	34,74	G.
Sept. 7	⊙ N.L. M.	0 . 45	1 . 25,0	26,7	23,0	21,0	26,2	22,1	12,020	− 39,32			0 . 45 . 44,63	G.
	⊙ S.L...........	1 . 15	2 . 33,3	35,2	31,8	29,3	34,4	30,8					1 . 17 . 32,37	G.
	Mars N.L........	33 . 45	1 . 31,1	31,6	24,9	26,9	28,1	29,0					33 . 46 . 28,53	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 33,0	28,4	28,4	25,2	28,2	28,0	11,586	− 30,26			169 . 25 . 58,21	G.
	δ Ursæ Minoris...	280 . 40	1 . 11,1	9,0	7,9	4,3	7,1	6,5					280 . 41 . 7,60	G.
	α Lyræ R. M.	121 . 25	3 . 20,2	18,0	14,8	13,2	13,8	15,8	6,010	+ 1 . 25,96			121 . 29 . 41,79	G.
	α Lyræ..........	328 . 35	2 . 26,4	25,4	21,7	18,9	22,4	21,8					328 . 37 . 22,67	G.
	Σ 2437	348 . 15	3 . 36,6	35,1	33,9	28,9	34,8	33,5					348 . 18 . 33,65	G.
	⁎ Æ. 18ʰ.55ᵐ.4ˢ. M.	...	...	...	...	...	...	...	2,243	+ 2 . 44,49			348 . 21 . 18,14	G.
	Σ 2484	348 . 25	2 . 32,8	30,0	29,2	23,8	30,1	28,9					348 . 27 . 29,03	G.
	Juno	15 . 0	1 . 64,2	63,1	60,8	57,8	61,4	59,8			+2	− 0,30	15 . 20,80	G.
	30 Aquarii.......	14 . 30	0 . 65,0	63,1	61,4	59,3	61,4	59,9					14 . 31 . 1,65	G.
	θ Aquarii........	15 . 45	2 . 62,7	62,3	60,1	56,4	59,3	58,8					15 . 47 . 59,82	G.
	(g) ☽ S.L. M.........	13 . 30	4 . 19,8	17,9	16,5	12,0	16,9	16,1	13,040	− 1 . 0,84	−2	− 6,98	13 . 33 . 8,55	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	13,232	− 1 . 4,76	−1	− 3,47	8,14	G.
	☽ N.L...........	13 . 0	2 . 60,3	58,7	57,2	52,8	55,7	55,2					13 . 2 . 56,53	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,330	− 3,90	+1	+ 3,45	56,08	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,473	− 6,77	+2	+ 6,86	56,62	G.
	λ Aquarii	15 . 35	3 . 64,0	63,0	62,0	57,0	60,3	59,9					15 . 39 . 0,87	G.
	β Piscium........	4 . 15	1 . 16,6	14,5	13,7	10,7	13,1	12,4					4 . 16 . 13,45	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 36,7	35,1	31,8	29,8	31,7	32,9	11,520	− 28,89			145 . 26 . 4,04	G.
	α Ursæ Majoris...	304 . 40	0 . 66,4	63,0	62,0	57,3	60,2	58,8					304 . 41 . 1,25	G.
Sept. 8	⊙ S.L. M.	1 . 40	1 . 36,8	37,0	35,0	32,4	35,9	32,4	14,600	− 1 . 33,14			1 . 40 . 1,71	G.
	⊙ N.L...........	1 . 5	3 . 14,8	15,0	13,8	10,3	14,6	11,8					1 . 8 . 13,25	G.
	Polaris SP. R. M..	174 . 20	2 . 27,9	23,1	23,1	19,2	23,1	23,6	12,920	− 58,12			174 . 21 . 25,11	G.
	Polaris SP........	275 . 45	0 . 45,0	42,6	40,2	37,0	41,9	39,7					275 . 45 . 41,03	G.
	Arcturus R. M....	102 . 50	1 . 30,4	27,8	23,9	24,0	24,0	26,8	10,563	− 8,99			102 . 51 . 17,11	G.
	Arcturus.........	347 . 15	0 . 46,8	45,1	43,9	41,8	45,1	43,0					347 . 15 . 44,25	G.
	Mars S.L.........	33 . 45	1 . 44,8	44,0	38,2	38,0	39,7	41,1					33 . 46 . 40,90	G.
	ξ Draconis R. M. .	139 . 40	4 . 13,9	10,3	9,2	5,5	8,2	9,2	8,097	+ 42,42			139 . 44 . 51,64	G.
	ξ Draconis	310 . 20	2 . 18,8	15,0	14,3	10,8	12,9	12,7					310 . 22 . 14,00	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 33,9	30,8	29,8	26,9	30,9	29,9	11,680	− 32,26			169 . 25 . 58,04	G.
	δ Ursæ Minoris...	280 . 40	1 . 13,0	9,6	7,8	4,9	6,8	7,7					280 . 41 . 8,25	G.
	α Lyræ R. M.	121 . 25	3 . 18,7	15,4	13,3	10,9	12,0	13,4	5,903	+ 1 . 28,16			121 . 29 . 41,98	G.
	α Lyræ	328 . 35	2 . 26,0	22,9	20,8	18,1	21,1	21,3					328 . 37 . 21,60	G.
	π Sagittarii R. M..	61 . 35	2 . 28,0	25,9	21,9	21,0	22,9	24,9	8,554	+ 32,89			61 . 37 . 56,89	G.
	π Sagittarii.......	28 . 25	4 . 9,3	7,8	5,0	2,4	3,9	6,6					28 . 29 . 5,67	G.
	(h) Σ 2482...........	348 . 20	2 . 49,6	45,1	46,3	41,2	45,0	45,5					348 . 22 . 45,33	G.

Runs taken Sept. 10, $22\frac{1}{2}^{h}$.
Coincidence at the middle wire taken Sept. 10, 23^{h}.

(a) Hurried. (b) Very badly defined. (c) Unsteady and indistinct. (d) Faint. (e) Not seen double. (f) The observer, being indisposed, did not feel confidence in the observations of this day. (g) The two Limbs were equally full. (h) Observed as single: the observer thought he saw it double.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
33,45	−10.22.32,74	30,262	64,0	68,5	10,41				27.24.25,13	−15,71	α Ursæ Maj. R.
	30,34								27,53		α Ursæ Majoris.
	45.51.36,16	30,262	64,0	68,5	58,50	6,08		15.53,90	83.23.42,96		☉.
	45.19.50,45				57,44	6,03			44,04		☉.
33,65	−39.17.54,38	30,248	65,0	71,5	46,20				−1.31.32,30	+9,82	Polaris SP. R.
	51,58								29,50		Polaris SP.
	78.42.56,73	30,228	65,3	66,8	4.37,36	10,66	10,790	6,62	116.34.25,09		Mars.
32,53	−34.22.25,62	30,234	64,9	64,8	39,12				3.24.3,54	+19,47	δ Ursæ Min. R.
	25,07								4,09		δ Ursæ Minoris.
31,79	13.33.50,31				13,80				51.21.12,39	+19,18	α Lyræ R.
	49,38								11,46		α Lyræ.
31,95	−6.59.15,92				7,01				30.47.45,35	+22,09	ο Draconis R.
	16,52								44,75		ο Draconis.
32,39	73.25.36,27			63,3	3.10,23				111.15.54,78	+6,55	π Sagittarii R.
	36,55								55,06		π Sagittarii.
	33.14.58,68				37,61				71.2.44,57	+18,03	∗ Æ.19h.5m.34s.
	55.56.14,87				1.24,65				93.44.47,80	+12,71	Σ 2490.
	59.48.45,34	30,246	63,8	58,4	1.39,31	4,85			97.37.23,08		Juno.
	63.26.1,88								100.10.42,26		☽.
	1,92				1.55,39	49.18,77		15.4,52	42,30		☽.
	2,49								42,87		☽.
	45.42.12,38	30,282	66,4	73,3	57,68	6,06		15.54,10	83.46.6,38		☉.
	46.14.0,12				58,75	6,12			6,93		☉.
	78.42.56,28	30,264	67,5	67,1	4.37,50	10,58	9,594	5,63	116.34.37,11		Mars.
32,91	−34.22.25,96	30,276	67,0	63,8	39,25				3.24.3,07	+19,57	δ Ursæ Min. R.
	24,65								4,38		δ Ursæ Minoris.
32,23	13.33.50,46				13,85				51.21.12,59	+19,31	α Lyræ R.
	50,42								12,55		α Lyræ.
	33.15.1,40			63,3	37,66				71.2.47,34	+17,33	Σ 2437.
	33.17.45,89				37,72				71.5.31,89	+17,34	∗ Æ.18h.55m.4s.
	33.23.56,78				37,87				71.11.42,93	+18,22	Σ 2484.
	59.58.28,55		63,9	59,3	1.39,87	4,85			97.47.11,85		Juno.
	59.27.29,40			58,5	1.37,99				97.16.15,67	+24,76	30 Aquarii.
	60.44.27,57				1.43,17				98.33.19,02	+25,43	θ Aquarii.
	58.29.36,30		63,4	58,0	1.34,45	46.38,03			95.16.43,31		☽.
	35,89								42,90		☽.
	57.59.24,28							14.57,69	40,31		☽.
	23,83				1.32,62	46.22,56			39,86		☽.
	24,37								40,40		☽.
	60.35.28,62				1.42,64				98.24.19,54	+27,20	λ Aquarii.
	49.12.41,20				1.7,20				87.0.56,68	+27,72	β Piscium.
32,65	−10.22.31,79	30,280	66,4	70,7	10,37				27.24.26,12	−16,41	α Ursæ Maj. R.
	31,00								26,91		α Ursæ Majoris.
	46.36.29,46		66,8	71,0	59,79	6,16		15.54,40	84.8.36,97		☉.
	46.4.41,00				58,70	6,10			36,28		☉.
33,07	−39.17.52,86	30,260	68,0	73,2	46,06				−1.31.30,64	+10,47	Polaris SP. R.
	51,22								29,00		Polaris SP.
30,68	32.12.15,14	30,250	68,0	72,5	35,50				69.59.58,92	−7,01	Arcturus R.
	12,00								55,78		Arcturus.
	78.43.8,65	30,240	67,3	64,3	4.38,98	10,51	10,735	6,28	116.34.39,12		Mars.
32,82	−4.41.19,39				4,70				33.5.44,19	+18,45	ξ Draconis R.
	18,25								45,33		ξ Draconis.
33,15	−34.22.25,79		66,0	62,0	39,34				3.24.3,15	+19,67	δ Ursæ Min. R.
	24,00								4,94		δ Ursæ Minoris.
31,79	13.33.50,27				13,88				51.21.12,43	+19,44	α Lyræ R.
	49,35								11,51		α Lyræ.
31,28	73.25.35,36			60,4	3.11,37				111.15.55,01	+6,52	π Sagittarii R.
	33,42								53,07		π Sagittarii.
	33.19.13,08				37,93				71.6.59,29	+18,23	Σ 2482.

Coincidence of Micrometer Wire with fixed Wire = 10r,121, 10r,125, 10r,134, 10r,143, 10r,148 at the five wires. From Sept. 8 = 10r,119, 10r,123, 10r,132, 10r,141, 10r,146.

One Micrometer Revolution = 20″,844.

Correction for Runs = −3″,6. From Sept. 7 = −1″,2.

Adopted Zenith Point = 315°. 3′. 32″,25.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Sept. 9	(a) ⊙ N.L. M.	1 . 30	1 . 24,3	23,4	22,0	18,4	23,0	20,0	11,743	− 33,58			1 . 30 . 48,22	G.
	S.L.	2 . 0	2 . 37,8	36,0	33,8	29,9	35,1	33,2					2 . 2 . 34,20	G.
	(b) Polaris SP. R. M.	174 . 20	2 . 32,9	29,0	28,0	25,1	29,5	28,9	13,094	− 1 . 1,74		+ 0,06	174 . 21 . 27,12	G.
	Polaris SP.	275 . 45	0 . 45,1	44,1	41,0	37,1	41,1	39,6				− 0,31	275 . 45 . 40,99	G.
	Mars N.L.	33 . 45	1 . 28,0	27,0	21,0	21,7	22,7	25,0					33 . 46 . 24,18	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 29,0	25,1	24,5	21,4	24,8	25,0	11,434	− 27,13			169 . 25 . 57,79	G.
	δ Ursæ Minoris	280 . 40	1 . 12,9	8,9	7,4	4,7	6,1	6,9					280 . 41 . 7,77	G.
	α Lyræ R. M.	121 . 25	3 . 22,2	18,5	15,3	14,7	15,0	17,0	6,070	+ 1 . 24,67			121 . 29 . 41,65	G.
	α Lyræ	328 . 35	3 . 26,0	22,3	19,7	17,3	20,8	21,0					328 . 37 . 21,08	G.
	ο Draconis R. M.	142 . 0	2 . 20,7	17,1	16,3	12,1	15,4	15,9	8,571	+ 32,53			142 . 2 . 48,68	G.
	ο Draconis	308 . 0	4 . 21,0	16,9	16,3	11,7	14,5	15,8					308 . 4 . 15,87	G.
	π Sagittarii R. M.	61 . 35	2 . 25,6	23,3	19,1	17,8	20,7	21,9	8,480	+ 34,43			61 . 37 . 55,73	G.
	π Sagittarii	28 . 25	4 . 11,5	9,5	6,3	4,4	6,5	8,0					28 . 29 . 7,53	G.
	(c) Σ 2482	348 . 20	2 . 51,1	46,9	47,0	42,2	46,4	46,9					348 . 22 . 46,63	G.
	(c) Σ 2490	10 . 55	4 . 49,8	47,8	45,7	42,3	45,7	47,1					10 . 59 . 46,22	G.
	Juno	15 . 20	1 . 24,1	22,5	20,3	17,2	19,1	19,8			+ 3	− 0,41	15 . 21 . 20,04	G.
	☽ N.L. M.	2 . 55	0 . 52,4	50,0	47,4	47,0	46,8	47,8	10,739	− 12,93	− 2	− 6,69	2 . 55 . 28,91	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,868	− 15,52	− 1	− 3,36	29,65	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,966	− 17,39			31,14	G.
	☽ N.L. M.	...	...	...	...	...	...	...	11,200	− 22,07	+ 1	+ 3,38	29,84	G.
	☽ N.L. M.	...	..	...	...	...	...	...	11,371	− 25,53	+ 2	+ 6,79	29,79	G.
	d Piscium	359 . 55	0 . 57,9	55,9	54,2	52,0	53,2	53,1					359 . 55 . 54,35	G.
Sept. 11	⊙ N.L. M.	2 . 15	2 . 17,7	17,0	15,0	13,2	14,1	14,9	13,088	− 1 . 1,62			2 . 16 . 13,61	G.
	⊙ S.L.	2 . 45	2 . 64,3	63,0	61,4	59,0	62,1	61,1					2 . 48 . 1,70	G.
	(d) 61¹ Cygni R. M.	120 . 45	4 . 18,5	14,0	13,8	9,6	10,8	13,6	7,132	+ 1 . 2,53			120 . 50 . 15,75	G.
	61¹ Cygni	329 . 15	1 . 52,9	50,0	48,0	46,1	46,4	47,9					329 . 16 . 48,48	G.
	Juno	15 . 40	0 . 31,9	29,8	26,0	25,2	27,8	27,4					15 . 40 . 28,00	G.
	(e) β Aquarii R. M.	76 . 35	1 . 22,1	19,7	16,9	15,8	14,8	16,7	7,780	+ 49,02			76 . 37 . 6,64	G.
	β Aquarii	13 . 25	4 . 61,0	58,2	56,1	54,4	56,0	56,0					13 . 29 . 56,95	G.
Sept. 12	Mars S.L.	33 . 45	0 . 32,1	32,1	26,8	26,2	28,8	29,8					33 . 45 . 29,28	G.
	π Sagittarii R. M.	61 . 35	2 . 19,9	18,1	13,9	13,6	14,4	18,9	8,240	+ 39,44			61 . 37 . 55,82	G.
	π Sagittarii	28 . 25	4 . 10,0	9,6	3,9	3,3	4,4	7,4					28 . 29 . 6,27	G.
	(f) Σ 2482	348 . 20	2 . 49,0	46,1	45,7	41,5	45,2	46,1					348 . 22 . 45,48	G.
	(g) Σ 2490	10 . 55	4 . 48,3	47,2	46,0	42,9	44,4	47,4					10 . 59 . 45,85	G.
	61¹ Cygni R M.	120 . 50	0 . 37,3	34,9	32,4	30,8	31,0	33,2	10,977	− 17,61			120 . 50 . 15,64	G.
	61¹ Cygni	329 . 15	1 . 53,4	50,3	49,6	45,9	47,1	48,2					329 . 16 . 49,02	G.
	Juno	15 . 45	4 . 54,0	53,0	52,0	48,1	50,2	51,8					15 . 49 . 51,32	G.
	Σ 2781. np.	15 . 30	2 . 44,9	42,0	41,4	38,4	41,1	41,6					15 . 32 . 41,47	G.
	✱ Æ. 21ʰ. 10ᵐ. 39ˢ.	15 . 0	2 . 7,2	5,1	4,0	0,0	2,0	3,8					15 . 2 . 3,60	G.
	α Cephei R. M.	144 . 45	0 . 27,1	24,8	23,2	20,1	22,9	23,9	7,512	+ 54,62			144 . 46 . 18,27	G.
	α Cephei	305 . 20	0 . 53,4	48,0	50,0	44,1	45,9	48,2					305 . 20 . 48,23	G.
	(e) β Aquarii R. M.	76 . 35	1 . 19,7	17,0	14,9	13,0	13,5	16,0	7,601	+ 52,76			76 . 37 . 8,39	G.
	β Aquarii	13 . 25	4 . 59,6	56,3	56,0	53,0	54,8	54,9					13 . 29 . 55,77	G.
Sept. 13	(h) ⊙ N.L. M.	3 . 0	2 . 23,5	23,0	21,0	18,3	20,2	19,9	11,160	− 21,43			3 . 1 . 59,45	G.
	⊙ S.L.	3 . 30	3 . 51,0	50,0	48,1	45,4	48,3	47,9					3 . 33 . 48,30	G.
	Polaris SP. R. M.	174 . 20	2 . 30,1	27,1	26,0	22,0	27,1	25,6	13,142	− 1 . 2,74			174 . 21 . 23,48	G.
	Polaris SP.	275 . 45	0 . 47,5	44,4	42,7	39,0	42,8	41,1					275 . 45 . 42,88	G.
	η Ursæ Maj. R. M.	132 . 55	1 . 19,1	17,5	14,9	11,9	14,1	14,1	9,381	+ 15,65			132 . 56 . 30,87	G.
	η Ursæ Majoris	317 . 10	0 . 34,8	32,1	31,0	27,0	30,4	29,9					317 . 10 . 30,85	G.
	Mars N.L.	33 . 40	4 . 40,0	38,1	34,9	32,3	35,1	37,9					33 . 44 . 36,20	G.
	Juno	15 . 55	4 . 17,2	15,2	14,6	8,4	11,7	13,0					15 . 59 . 13,18	G.
	Σ 2781. np.	15 . 30	2 . 46,0	45,1	44,3	40,0	42,0	42,7					15 . 32 . 43,25	G.
	✱ Æ. 21ʰ. 10ᵐ. 39ˢ.	15 . 0	2 . 8,6	8,0	5,7	1,4	3,3	3,8					15 . 2 . 5,05	G.
Sept. 15	(i) ⊙ N.L. M.	3 . 45	4 . 15,3	16,7	14,6	10,9	15,1	12,7	13,530	− 1 . 10,83			3 . 48 . 3,17	G.
	⊙ S.L.	4 . 15	4 . 54,1	56,0	53,4	50,3	55,2	52,0					4 . 19 . 53,23	G.
	(k) Mars N.L.	33 . 40	2 . 56,1	57,8	51,7	50,4	53,7	53,7					33 . 42 . 53,75	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 26,2	23,3	21,5	18,9	22,6	22,8	11,267	− 23,65			169 . 25 . 58,83	G.
	δ Ursæ Minoris	280 . 40	1 . 11,0	7,2	5,9	3,0	4,8	6,5					280 . 41 . 6,35	G.

Sept. 9, 2ʰ. Molyneux fast on Hardy, 41ˢ,0.
Runs taken Sept. 17, 22ʰ.

(a) Badly defined. (b) Much clouded. Times by Molyneux, 13ʰ. 5ᵐ. 33ˢ and 13ʰ. 6ᵐ. 52ˢ. (c) Not seen double. (d) Very cloudy. (e) No correction for Runs. (f) Apparently double. (g) A fainter star of about 3′ less N.P.D. preceded this by 2 or 3 seconds. (h) Badly defined. (i) Good. (k) Very cloudy.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	46 . 27 . 15,97	30,168	66,8	73,2	59,00	6,15		15 . 54,60	84 . 31 . 11,70		☉.
	46 . 59 . 1,95				1 . 0,10	6,20			9,53		☉.
34,05	− 39 . 17 . 54,87	30,150	68,6	75,2	45,72				− 1 . 31 . 32,31	+ 10,82	Polaris SP. R.
	51,26								28,70		Polaris SP.
	78 . 42 . 51,93	30,120	68,5	65,5	4 . 37,08	10,43	9,555	6,02	116 . 34 . 32,88		Mars.
32,78	− 34 . 22 . 25,54	30,132	67,0	62,8	39,14				3 . 24 . 3,60	+ 19,87	δ Ursæ Min. R.
	24,48								4,66		δ Ursæ Minoris.
31,37	13 . 33 . 50,60				13,81				51 . 21 . 12,69	+ 19,53	α Lyræ R.
	48,83								10,92		α Lyræ.
32,28	− 6 . 59 . 16,43				7,02				30 . 47 . 44,83	+ 22,57	o Draconis R.
	16,38								44,88		o Draconis.
31,63	73 . 25 . 36,52	30,124	66,8	61,8	3 . 10,10				111 . 15 . 54,90	+ 6,50	π Sagittarii R.
	35,28								53,66		π Sagittarii.
	33 . 19 . 14.38				37,68				71 . 7 . 0,34	+ 18,35	Σ 2482.
	55 . 56 . 13,97				1 . 24,60				93 . 44 . 46,85	+ 12,83	Σ 2490.
	60 . 17 . 47,79	30,100	63,5	56,5	1 . 41,15	4,84			98 . 6 . 32,38		Juno.
	47 . 51 . 56,66	30,076	61,5	56,9					85 . 14 . 52,64		☽.
	57,40								53,38		☽.
	58,89				1 . 3,82	40 . 3,62		14 . 47,50	54,87		☽.
	57,59								53,57		☽.
	57,54								53,52		☽.
	44 . 52 . 22,10			56,7	57,52				82 . 40 . 27,90	+ 28,02	*d* Piscium.
	47 . 12 . 41,36	29,990	65,6	66,9	1 . 0,97	6,23		15 . 55,10	85 . 16 . 39,48		☉.
	47 . 44 . 29,45				1 . 2,11	6,28			38,46		☉.
32,12	14 . 13 . 16,50	30,116	63,8	59,4	14,60				52 . 0 . 39,38	+ 29,30	61[1] Cygni R.
	16,23								39,11		61[1] Cygni.
	60 . 36 . 55,75				1 . 41,92	4,83			98 . 25 . 41,12		Juno.
31,80	58 . 26 . 25,61			59,2	1 . 33,53				96 . 15 . 7,42	+ 23,04	β Aquarii R.
	24,70								6,51		β Aquarii.
	78 . 41 . 57,03	30,232	66,7	63,6	4 . 38,82	10,21	10,720	6,13	116 . 33 . 27,79		Mars.
31,05	73 . 25 . 36,43	30,242	64,8	60,5	3 . 11,35				111 . 15 . 56,06	+ 6,45	π Sagittarii R.
	34,02								53,65		π Sagittarii.
	33 . 19 . 33,23				37,93				71 . 6 . 59,44	+ 18,61	Σ 2482.
	55 . 56 . 13,60				1 . 25,15				93 . 44 . 47,03	+ 12,90	Σ 2490.
32,33	14 . 13 . 16,61	30,234	61,7	55,6	14,77				52 . 0 . 39,66	+ 29,53	61[1] Cygni R.
	16,77								39,82		61[1] Cygni.
	60 . 46 . 19,07				1 . 43,77	4,83			98 . 35 . 6,29		Juno.
	60 . 29 . 9,22				1 . 42,57				98 . 18 . 0,07	+ 21,69	Σ 2781. *np.*
	59 . 58 . 31,35				1 . 40,48				97 . 47 . 20,11	+ 21,94	∗ Æ.$21^h.10^m.39^s$.
33,25	− 9 . 42 . 46,02				9,97				28 . 4 . 12,29	+ 27,53	α Cephei R.
	44,02								14,29		α Cephei.
32,08	58 . 26 . 23,86				1 . 34,58				96 . 15 . 6,72	+ 23,06	β Aquarii R.
	23,52								6,38		β Aquarii.
	47 . 58 . 27,20	30,122	64,7	66,1	1 . 2,99	6,31		15 . 55,60	86 . 2 . 27,76		☉.
	48 . 30 . 16,05				1 . 4,17	6,36			26,54		☉.
33,18	− 39 . 17 . 51,23	30,090	65,4	67,9	46,28				− 1 . 31 . 29,23	+ 12,22	Polaris SP. R.
	49,37								27,37		Polaris SP.
30,86	2 . 6 . 61,38	30,078	65,7	68,0	2,09				39 . 54 . 11,75	− 5,65	η Ursæ Maj. R.
	58,60								8,97		η Ursæ Majoris.
	78 . 41 . 3,95	30,030	63,9	59,0	4 . 39,24	10,14	9,535	6,23	116 . 32 . 47,56		Mars.
	60 . 55 . 40,93	29,978	58,0	51,0	1 . 44,52	4,82			98 . 44 . 28,91		Juno.
	60 . 29 . 11,00				1 . 42,66				98 . 18 . 1,94	+ 21,70	Σ 2781. *np.*
	59 . 58 . 32,80				1 . 40,58				97 . 47 . 21,66	+ 21,97	∗ Æ.$21^h.10^m.39^s$.
	48 . 44 . 30,92	29,838	66,5	72,9	1 . 3,25	6,38		15 . 56,10	86 . 48 . 32,17		☉.
	49 . 16 . 20,98				1 . 4,44	6,44			31,16		☉.
	78 . 39 . 21,50	29,900	66,7	64,0	4 . 34,52	10,00	9,530	6,28	116 . 31 . 0,58		Mars.
32,59	− 34 . 22 . 26,58				38,75				3 . 24 . 2,95	+ 20,47	δ Ursæ Min. R.
	25,90								3,63		δ Ursæ Minoris.

Coincidence of Micrometer Wire with fixed Wire = 10^r,119, 10^r,123, 10^r,132, 10^r,141, 10^r,146 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = − 1″,2. From Sept. 15 = − 1″,6.
Adopted Zenith Point = 315°. 3′. 32″,25.
Assumed Colatitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Sept. 15	α Lyræ R. M.	121 . 25	3 . 23,0	20,9	17,2	15,3	16,4	19,1	6,098	+ 1 . 24,09			121 . 29 . 42,56	G.
	α Lyræ	328 . 35	2 . 24,5	21,8	18,9	16,3	19,1	20,4					328 . 37 . 20,03	G.
	61¹ Cygni R. M.	120 . 45	4 . 10,2	8,2	6,2	3,9	5,1	6,7	6,781	+ 1 . 9,84			120 . 50 . 16,34	G.
	61¹ Cygni	329 . 15	1 . 51,6	47,9	47,0	43,9	46,3	47,0					329 . 16 . 47,18	G.
	α Cephei R. M.	144 . 45	0 . 46,6	47,2	44,2	41,7	43,7	44,5	8,484	+ 34,35			144 . 46 . 18,97	G.
	α Cephei	305 . 20	0 . 51,5	46,0	46,9	43,2	44,4	47,0					305 . 20 . 46,47	G.
Sept. 16	⊙ S.L. M.	4 . 40	4 . 19,5	19,8	16,3	14,4	17,6	17,8	13,752	− 1 . 15,46			4 . 43 . 1,87	G.
	⊙ N.L.	4 . 10	1 . 11,7	13,1	10,3	9,9	10,8	10,4					4 . 11 . 10,97	G.
	Polaris SP. R. M.	174 . 20	2 . 14,9	12,3	10,8	8,3	11,4	11,4	12,420	− 47,70			174 . 21 . 23,70	G.
	Polaris SP.	275 . 45	0 . 47,0	45,8	43,1	39,8	45,4	42,2					275 . 45 . 43,85	G.
	Mars S.L.	33 . 40	1 . 62,0	60,8	55,4	56,0	56,8	60,6					33 . 41 . 58,50	G.
	α Lyræ R. M.	121 . 25	3 . 21,2	16,9	15,2	12,9	14,0	18,0	5,970	+ 1 . 26,75			121 . 29 . 42,95	G.
	α Lyræ	328 . 35	2 . 22,6	22,2	18,5	16,8	20,2	20,2					328 . 37 . 19,97	G.
	Σ 2484. *nf.*	348 . 25	2 . 30,8	28,0	27,8	23,0	28,4	28,9					348 . 27 . 27,68	G.
	(*a*) Σ 2489. *sf.*	352 . 55	4 . 7,3	5,9	5,8	1,7	5,3	6,2					352 . 59 . 5,15	G.
	61¹ Cygni R. M.	120 . 45	4 . 14,6	13,2	11,9	9,1	11,1	13,0	7,041	+ 1 . 4,43			120 . 50 . 16,36	G.
	61¹ Cygni	329 . 15	1 . 52,0	48,0	47,4	44,1	46,3	48,0					329 . 16 . 47,53	G.
	Juno	16 . 25	1 . 45,8	44,3	42,5	39,7	43,0	43,6					16 . 26 . 43,07	G.
	Σ 2781. *np.*	15 . 30	2 . 45,5	43,9	42,3	39,4	42,7	43,6					15 . 32 . 42,75	G.
	⁎ Æ. 21ʰ. 10ᵐ. 39ˢ.	15 . 0	2 . 8,0	6,1	5,0	1,9	5,0	5,4					15 . 2 . 5,12	G.
	α Cephei R. M.	144 . 45	0 . 26,4	24,0	22,1	19,7	22,8	23,3	7,455	+ 55,81			144 . 46 . 18,84	G.
	α Cephei	305 . 20	0 . 50,2	45,5	46,1	42,2	44,0	46,1					305 . 20 . 45,65	G.
Sept. 18	(*b*) ⊙ S.L. M.	5 . 30	0 . 15,8	14,7	13,4	10,8	13,9	12,9	12,497	− 49,11			5 . 29 . 24,32	G.
	⊙ N.L.	4 . 55	2 . 37,4	35,8	33,5	30,3	35,2	33,8					4 . 57 . 34,20	G.
	61¹ Cygni R. M.	120 . 45	4 . 18,1	15,8	13,8	11,9	12,8	14,6	7,081	+ 1 . 3,78			120 . 50 . 18,05	G.
	61¹ Cygni	329 . 15	1 . 52,0	48,1	47,1	42,8	44,9	46,0			+1	+ 0,12	329 . 16 . 46,84	G.
	(*c*) Σ 2781. *np.*	15 . 30	2 . 46,2	43,7	42,0	39,3	41,6	41,8					15 . 32 . 42,28	G.
	α Cephei R. M.	144 . 45	0 . 28,9	25,3	22,6	21,4	23,5	23,9	7,499	+ 55,07			144 . 46 . 19,32	G.
	α Cephei	305 . 20	0 . 51,2	46,0	46,0	42,8	43,8	44,8					305 . 20 . 45,73	G.
Sept. 20	(*d*) ⊙ S.L. M.	6 . 15	2 . 20,1	18,3	16,1	13,1	17,0	16,0	13,820	− 1 . 16,69			6 . 15 . 59,96	G.
	⊙ N.L.	5 . 40	4 . 9,2	8,7	8,0	3,9	7,6	6,4					5 . 44 . 7,03	G.
	δ Ursæ Min. R. M.	169 . 25	1 . 25,8	20,5	20,4	16,8	20,0	20,4	11,169	− 21,43			169 . 25 . 59,15	G.
	δ Ursæ Minoris	280 . 40	1 . 11,1	6,4	6,0	2,0	4,5	4,9					280 . 41 . 5,75	G.
	(*e*) α Lyræ R. M.	121 . 25	3 . 24,0	19,4	17,2	15,0	15,8	18,4	6,048	+ 1 . 25,32			121 . 29 . 43,44	G.
	α Lyræ	328 . 35	2 . 26,0	22,0	20,7	16,9	20,5	20,2			+2	+ 0,48	328 . 37 . 21,41	G.
	Σ 2489.	352 . 55	4 . 7,8	3,4	5,0	0,0	3,8	3,0					352 . 59 . 3,62	G.
	61¹ Cygni R. M.	120 . 45	3 . 41,1	38,7	34,2	33,3	37,0	36,1	5,256	+ 1 . 41,83			120 . 50 . 18,36	G.
	61¹ Cygni	329 . 15	1 . 52,3	47,6	48,8	43,9	45,7	46,0					329 . 16 . 47,28	G.
	Juno	17 . 0	1 . 54,4	51,7	51,5	46,2	49,3	49,1					17 . 1 . 50,27	G
	Σ 2781. *np.*	15 . 30	2 . 46,9	42,9	43,3	38,9	41,0	41,8					15 . 32 . 42,32	G.
	⁎ Æ. 21ʰ. 10ᵐ. 39ˢ.	15 . 0	2 . 9,4	6,2	5,8	1,0	3,8	4,1					15 . 2 . 4,93	G.
	α Cephei R. M.	144 . 45	0 . 25,8	21,8	21,1	17,8	19,9	20,2	7,270	+ 59,85			144 . 46 . 20,93	G.
	α Cephei	305 . 20	0 . 49,5	45,6	45,5	41,8	43,8	43,8			+1	+ 0,28	305 . 20 . 45,25	G.
Sept. 21	⊙ N.L. M.	6 . 5	3 . 32,5	31,8	30,1	25,4	28,7	28,9	13,137	− 1 . 2,46			6 . 7 . 26,92	G.
	⊙ S.L.	6 . 35	4 . 24,7	23,0	22,1	18,1	21,9	21,7					6 . 39 . 21,68	G.
Sept. 22	⊙ S.L. M.	7 . 0	3 . 18,0	15,6	15,8	11,0	12,9	13,5	11,724	− 32,95			7 . 2 . 41,31	G.
	⊙ N.L.	6 . 30	0 . 52,3	50,4	49,9	46,9	48,8	48,4					6 . 30 . 49,40	G.
	Mars S.L.	33 . 30	1 . 37,1	34,6	31,1	29,8	31,1	33,8					33 . 31 . 32,83	G.
	π Sagittarii R. M.	61 . 35	1 . 27,8	23,3	20,9	19,5	19,3	23,8	5,466	+ 1 . 37,45			61 . 37 . 59,82	G.
	π Sagittarii	28 . 25	4 . 10,7	7,2	5,8	3,0	4,1	6,3					28 . 29 . 5,97	G.
	Σ 2489.	352 . 55	3 . 66,3	62,9	65,0	59,4	63,0	62,8					352 . 59 . 3,02	G.
	61¹ Cygni R. M.	120 . 45	4 . 9,0	5,3	5,9	0,9	2,6	4,1	6,552	+ 1 . 14,81			120 . 50 . 19,23	G.
	61¹ Cygni	329 . 15	1 . 51,6	46,0	49,5	43,3	44,7	45,8					329 . 16 . 46,77	G.
	Juno	17 . 15	3 . 42,1	38,8	39,1	34,4	38,2	39,0					17 . 18 . 38,40	G.
	Σ 2781. *np*	15 . 30	2 . 45,4	42,0	42,0	38,1	41,0	41,1					15 . 32 . 41,45	G.
	⁎ Æ. 21ʰ. 10ᵐ. 39ˢ.	15 . 0	2 . 7,3	4,1	5,0	0,2	2,5	2,9					15 . 2 . 3,55	G.

Coincidence at the middle wire taken Sept. 26, 23ʰ.

(*a*) The small star was just visible.
(*b*) Dark clouds passing.
(*c*) Very cloudy.
(*d*) Better defined than usual.
(*e*) Indefinite.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
31,29	13 . 33 . 49,69				13,67				51 . 21 . 11,64	+ 20,07	α Lyræ R.
	47,78								9,73		α Lyræ.
31,76	14 . 13 . 15,91	29,944	64,5	60,1	14,49				52 . 0 . 38,68	+ 30,22	61¹ Cygni R.
	14,93								37,70		61¹ Cygni.
32,72	− 9 . 42 . 46,72				9,79				28 . 4 . 11,77	+ 28,43	α Cephei R.
	45,78								12,71		α Cephei.
	49 . 39 . 29,62	30,000	66,4	75,0	1 . 5,41	6,48		15 . 56,40	87 . 11 . 40,43		☉.
	49 . 7 . 38,72				1 . 4,19	6,43			41,16		☉.
33,78	− 39 . 17 . 51,45		69,7	76,2	45,40				− 1 . 31 . 28,57	+ 13,27	Polaris SP. R.
	48,40								25,52		Polaris SP.
	78 . 38 . 26,25	30,026	67,2	67,2	4 . 33,50	9,93	10,743	6,37	116 . 29 . 51,73		Mars.
31,46	13 . 33 . 49,30			65,6	13,69				51 . 21 . 11,27	+ 20,16	α Lyræ R.
	47,72								9,69		α Lyræ.
	33 . 23 . 55,43	30,058	66,8	64,1	37,54				71 . 11 . 41,25	+ 18,99	Σ 2484. *nf.*
	37 . 55 . 32,90				44,35				75 . 43 . 25,53	+ 18,04	Σ 2489. *sf.*
31,94	14 . 13 . 15,89	30,076	65,5	61,0	14,53				52 . 0 . 38,70	+ 30,45	61¹ Cygni R.
	15,28								38,09		61¹ Cygni.
	61 . 23 . 10,82				1 . 44,70	4,80			99 . 11 . 59,00		Juno.
	60 . 29 . 10,50				1 . 40,93				98 . 17 . 59,71	+ 21,73	Σ 2781. *np.*
	59 . 58 . 32,87				1 . 38,88				97 . 47 . 20,03	+ 21,99	∗Æ.$21^{h}.10^{m}.39^{s}$.
32,25	− 9 . 42 . 46,59				9,82				28 . 4 . 11,87	+ 28,73	α Cephei R.
	46,60								11,86		α Cephei.
	50 . 25 . 51,12	30,108	68,2	73,0	1 . 7,72	6,55		15 . 56,90	87 . 58 . 3,67		☉.
	49 . 54 . 1,00				1 . 6,46	6,50			6,14		☉.
32,45	14 . 13 . 15,15	30,148	65,6	62,7	14,52				52 . 0 . 37,95	+ 30,91	61¹ Cygni R.
	13,64								36,44		61¹ Cygni.
	60 . 29 . 9,08				1 . 40,82				98 . 17 . 50,18	+ 21,74	Σ 2781. *np.*
32,53	− 9 . 42 . 46,12				9,81				28 . 4 . 12,35	+ 29,33	α Cephei R.
	47,47								11,00		α Cephei.
	51 . 12 . 26,76	30,090	66,6	73,0	1 . 9,57	6,63		15 . 57,40	88 . 44 . 40,58		☉.
	50 . 40 . 33,83				1 . 8,27	6,58			41,20		☉.
32,45	− 34 . 22 . 25,95	30,060	67,0	62,5	39,07				3 . 24 . 3,26	+ 20,77	δ Ursæ Min. R.
	27,45								1,76		δ Ursæ Minoris.
32,43	13 . 33 . 49,76				13,79				51 . 21 . 11,83	+ 20,42	α Lyræ R.
	48,21								10,28		α Lyræ.
	37 . 55 . 30,42			60,5	44,67				75 . 43 . 23,37	+ 18,29	Σ 2489.
32,82	14 . 13 . 14,84	30,084	64,4	58,4	14,61				52 . 0 . 37,73	+ 31,29	61¹ Cygni R.
	14,08								36,97		61¹ Cygni.
	61 . 58 . 17,07				1 . 47,85	4,76			99 . 47 . 8,44		Juno.
	60 . 29 . 9,12				1 . 41,48				98 . 17 . 58,88	+ 21,74	Σ 2781. *np.*
	59 . 58 . 31,73				1 . 39,42				97 . 47 . 19,43	+ 22,02	∗Æ.$21^{h}.10^{m}.39^{s}$.
33,09	− 9 . 42 . 47,73				9,87				28 . 4 . 10,68	+ 29,85	α Cephei R.
	47,95								10,46		α Cephei.
	51 . 3 . 53,72	30,150	65,6	68,2	1 . 10,02	6,61		15 . 57,70	89 . 8 . 3,11		☉.
	51 . 35 . 48,48				1 . 11,36	6,67			3,75		☉.
	51 . 59 . 8,11	30,426	64,1	65,0	1 . 13,48	6,70		15 . 57,90	89 . 31 . 25,27		☉.
	51 . 27 . 16,20				1 . 12,10	6,65			27,83		☉.
	78 . 27 . 59,63	30,428	63,6	59,3	4 . 37,57	9,53	10,800	6,87	116 . 19 . 29,08		Mars.
32,89	73 . 25 . 33,38			57,2	3 . 13,81				111 . 15 . 55,47	+ 6,29	π Sagittarii R.
	32,77								54,86		π Sagittarii.
	37 . 55 . 29,82				45,52				75 . 43 . 23,62	+ 18,39	Σ 2489.
33,00	14 . 13 . 13,97	30,464	61,0	53,5	14,94				52 . 0 . 37,19	+ 31,67	61¹ Cygni R.
	13,57								36,79		61¹ Cygni.
	62 . 15 . 5,20				1 . 51,61	4,74			100 . 4 . 0,35		Juno.
	60 . 29 . 8,25				1 . 43,79				98 . 18 . 0,32	+ 21,75	Σ 2781. *np.*
	59 . 58 . 30,35				1 . 41,75				97 . 47 . 20,38	+ 22,02	∗Æ.$21^{h}.10^{m}.39^{s}$.

Coincidence of Micrometer Wire with fixed Wire = 10^{r},119, 10^{r},123, 10^{r},132, 10^{r},141, 10^{r},146 at the five wires. From Sept. 18 = 10^{r},132, 10^{r},137, 10^{r},141, 10^{r},154, 10^{r},157.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 1″,6.

Adopted Zenith Point = 315°. 3′. 32″,25. From Sept. 18 = 315°. 3′. 33″,20.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Sept. 22	α Cephei R. M....	144 . 45	0 . 25,8	21,4	21,5	17,8	19,8	21,1	7,244	+1. 0,40			144 . 46 . 21,62	G.
	α Cephei.........	305 . 20	0 . 50,9	44,2	47,9	41,7	43,6	44,4					305 . 20 . 45,42	G.
Sept. 23	η Serpentis R. M. .	79 . 55	1 . 23,7	21,0	19,1	17,3	17,0	20,2	10,625	– 10,09			79 . 56 . 9,56	G.
	η Serpentis	10 . 10	0 . 59,8	56,3	57,0	53,8	55,8	55,3					10 . 10 . 56,28	G.
	Mars S.L.	33 . 25	4 . 17,0	15,4	13,9	10,8	12,5	16,1					33 . 29 . 14,07	G.
	α Lyræ R. M.....	121 . 25	3 . 14,2	9,7	10,5	7,1	7,1	9,2	5,616	+1 . 34,32			121 . 29 . 43,79	G.
	α Lyræ...........	328 . 35	2 . 25,6	20,2	21,0	16,9	20,0	20,7					328 . 37 . 20,60	G.
	π Sagittarii R. M. .	61 . 35	1 . 29,6	26,3	25,1	22,5	24,3	26,0	5,665	+1 . 33,31			61 . 37 . 58,88	G.
	π Sagittarii.......	28 . 25	4 . 8,0	5,6	5,4	1,2	2,8	4,4					28 . 29 . 4,35	G.
	Juno.............	17 . 25	1 . 55,0	51,0	52,5	47,2	50,1	50,1					17 . 26 . 50,88	G.
	Σ 2781. *np*........	15 . 30	2 . 42,0	39,0	39,7	35,4	37,8	38,6					15 . 32 . 38,62	G.
	⁎ Æ. 21h. 10m. 39s.	15 . 0	1 . 66,1	62,5	63,7	58,8	61,2	61,7					15 . 2 . 2,23	G.
	α Cephei R. M....	144 . 45	0 . 25,0	21,0	20,9	18,2	18,7	21,0	7,187	+1 . 1,57			144 . 46 . 22,35	G.
	α Cephei	305 . 20	0 . 51,1	43,2	47,8	41,6	42,2	44,8					305 . 20 . 45,08	G.
Sept. 26	⊙ S.L. M.........	8 . 35	2 . 17,0	14,9	15,4	11,2	12,1	13,0	12,733	– 54,03			8 . 36 . 19,90	G.
	⊙ N.L............	8 . 0	4 . 27,1	23,9	25,0	20,3	22,0	24,0					8 . 4 . 23,70	G.
	Mars S.L.........	33 . 20	0 . 66,8	63,4	63,9	59,0	60,8	63,3					33 . 21 . 2,87	G.
	π Sagittarii R. M. .	61 . 35	1 . 25,8	21,3	21,4	17,2	19,4	21,9	5,350	+1 . 39,87			61 . 38 . 1,04	G.
	π Sagittarii.......	28 . 25	4 . 9,3	6,0	8,2	2,2	4,0	5,6					28 . 29 . 5,87	G.
	α Cephei R. M....	144 . 45	0 . 33,9	28,7	30,9	25,0	27,8	28,0	7,550	+ 54,01			144 . 44 . 23,06	G.
	α Cephei	305 . 20	0 . 53,8	45,0	51,2	42,4	44,9	45,3					305 . 20 . 47,10	G.
Sept. 27	(a) ⊙ N.L. M........	8 . 25	3 . 20,2	19,0	20,9	14,2	16,5	17,8	11,556	– 29,49			8 . 27 . 48,59	G.
	⊙ S.L.	8 . 55	4 . 50,5	47,1	49,8	42,9	45,6	47,0					8 . 59 . 47,13	G.
	Mars S.L.	33 . 15	2 . 64,4	61,4	62,0	56,7	58,0	62,7					33 . 18 . 0,85	G.
	π Sagittarii R. M. .	61 . 35	2 . 23,0	19,2	19,9	15,3	16,4	20,5	8,187	+ 40,72			61 . 37 . 59,77	G.
	π Sagittarii	28 . 25	4 . 7,6	5,1	6,2	1,4	2,3	5,4					28 . 29 . 4,65	G.
	α^1 Capricorni R. M.	69 . 50	2 . 26,7	22,1	22,7	17,9	19,2	22,8	6,197	+1 . 22,20			69 . 53 . 44,10	G.
	α^1 Capricorni	20 . 10	3 . 27,0	23,2	25,8	19,8	20,2	24,1					20 . 13 . 23,33	G.
	α^2 Capricorni R. M.	69 . 50	2 . 26,7	22,1	22,7	17,9	19,2	22,8	12,757	– 54,54			69 . 51 . 27,36	G.
	α^2 Capricorni M. . .	20 . 10	3 . 27,0	23,2	25,8	19,8	20,2	24,1	3,648	+2 . 15,34			20 . 15 . 38,67	G.
	61^1 Cygni R. M...	120 . 45	3 . 61,7	58,1	59,9	54,4	54,4	58,2	6,123	+1 . 23,76			120 . 50 . 21,53	G.
	61^1 Cygni.........	329 . 15	1 . 52,0	46,0	50,2	43,8	44,2	46,2					329 . 16 . 47,07	G.
	Juno	17 . 55	3 . 20,4	17,8	20,0	13,9	15,4	19,1					17 . 58 . 17,75	G.
	Σ 2781. *np*........	15 . 30	2 . 44,5	42,3	43,9	39,0	41,0	42,3					15 . 32 . 42,15	G.
	⁎ Æ. 21h. 10m. 39s.	15 . 0	2 . 6,9	5,0	6,7	0,8	2,2	4,0					15 . 2 . 4,27	G.
	α Cephei R. M....	144 . 45	0 . 32,9	29,8	30,3	26,0	27,8	28,8	7,514	+ 54,77			144 . 46 . 24,04	G.
	α Cephei..........	305 . 20	0 . 51,3	45,0	49,6	42,1	43,2	44,9					305 . 20 . 46,02	G.
Sept. 28	⊙ S.L. M.........	9 . 25	0 . 25,5	23,4	23,1	19,3	23,1	22,8	16,515	–2 . 12,85			9 . 23 . 10,02	G.
	⊙ N.L.	8 . 50	1 . 15,4	14,4	14,8	9,8	12,3	12,5					8 . 51 . 13,20	G.
	Mars S.L.........	33 . 10	4 . 46,7	48,0	46,0	40,0	44,9	46,0					33 . 14 . 45,25	G.
	Regulus R. M. ...	95 . 30	4 . 39,0	36,7	37,1	32,8	35,1	37,2	8,419	+ 35,89			95 . 35 . 12,19	G.
	Regulus..........	354 . 30	1 . 57,4	55,9	57,8	51,9	55,6	55,0					354 . 31 . 55,60	G.
Sept. 29	⊙ N.L. M.........	9 . 10	4 . 17,0	17,0	16,4	11,1	15,7	15,0	9,243	+ 18,73			9 . 14 . 34,08	G.
	⊙ S.L.	9 . 45	1 . 34,3	34,7	33,3	29,7	33,9	33,6					9 . 46 . 33,25	G.
	(b) α Herculis R. M. .	97 . 25	0 . 23,0	22,1	20,0	18,1	19,2	20,4	8,211	+ 40,23			97 . 26 . 0,70	G.
	α Herculis........	352 . 40	1 . 7,6	5,3	6,0	0,9	5,4	3,8					352 . 41 . 4,83	G.
	Mars N.L.........	33 . 10	1 . 6,7	9,0	3,3	2,8	6,1	5,9					33 . 11 . 5,63	G.
Oct. 2	⊙ S.L. M.........	10 . 55	2 . 24,1	26,0	23,7	19,8	22,9	24,3	12,639	– 51,99			10 . 56 . 31,48	G.
	⊙ N.L............	10 . 20	4 . 32,1	33,3	31,0	27,0	32,1	31,0					10 . 24 . 31,07	G.
	Polaris SP. R. M. .	174 . 20	2 . 13,2	12,6	11,0	7,4	11,6	11,1	12,778	– 54,89			174 . 21 . 16,26	G.
	Polaris SP.........	275 . 45	0 . 55,0	54,7	52,5	48,8	52,8	52,4					275 . 45 . 52,70	G.
	θ Cygni R. M.....	132 . 40	1 . 16,9	14,4	13,1	10,1	13,9	12,4	5,641	+1 . 33,88			132 . 42 . 47,35	G.
	θ Cygni..........	317 . 20	4 . 22,0	17,8	18,9	13,0	18,3	18,6					317 . 24 . 18,08	G.
	γ Aquilæ R. M....	93 . 5	1 . 23,1	19,9	18,0	16,9	17,0	18,1	11,003	– 17,89			93 . 6 . 0,94	G.
	γ Aquilæ..........	357 . 0	1 . 9,1	5,2	6,2	3,7	6,8	6,8					357 . 1 . 6,30	G.

Runs taken Sept. 26, 22½h.
Coincidence at the middle wire taken Oct. 6, 22h.

(a) Very much clouded.

(b) Very faint.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
33,52	− 9 . 42 . 48,42				10,09				28 . 4 . 9,77	+ 30,37	α Cephei R.
	47,78								10,41		α Cephei.
32,92	55 . 7 . 23,64	30,500	62,8	58,7	1 . 23,61				92 . 55 . 55,53	+ 7,35	η Serpentis R.
	23,08								54,97		η Serpentis.
	78 . 25 . 40,87				4 . 37,66	9,47	10,740	6,25	116 . 17 . 11,09		Mars.
32,20	13 . 33 . 49,41				14,10				51 . 21 . 11,79	+ 20,54	α Lyræ R.
	47,40								9,78		α Lyræ.
31,62	73 . 25 . 34,32	30,502	61,4	55,7	3 . 14,90				111 . 15 . 57,50	+ 6,28	π Sagittarii R.
	31,15								54,33		π Sagittarii.
	62 . 23 . 17,68	30,506	59,3	51,7	1 . 52,82	4,73			100 . 12 . 14,05		Juno.
	60 . 29 . 5,42				1 . 44,31				98 . 17 . 58,00	+ 21,72	Σ 2781. *np.*
	59 . 58 . 29,03				1 . 42,19				97 . 47 . 19,50	+ 22,02	⁎ Æ.$21^h.10^m.39^s$.
33,72	− 9 . 42 . 49,15				10,14				28 . 4 . 8,99	+ 30,63	α Cephei R.
	48,12								10,02		α Cephei.
	53 . 32 . 46,70	30,050	54,4	53,6	1 . 18,56	6,84		15 . 58,90	91 . 5 . 7,80		⊙.
	53 . 0 . 50,50				1 . 7,06	6,79			7,95		⊙.
	78 . 17 . 29,67	29,974	52,0	46,1	4 . 36,99	9,27	10,789	6,76	116 . 8 . 58,91		Mars.
33,46	73 . 25 . 32,16	29,972	51,5	45,2	3 . 15,74				111 . 15 . 56,18	+ 6,23	π Sagittarii R.
	32,67								56,69		π Sagittarii.
35,08	− 9 . 42 . 49,86	29,928	49,0	43,5	10,12				28 . 4 . 8,30	+ 31,41	α Cephei R.
	46,10								12,06		α Cephei.
	53 . 24 . 15,39	29,680	51,0	50,1	1 . 17,75	6,84		15 . 59,20	91 . 28 . 33,78		⊙.
	53 . 56 . 13,93				1 . 19,27	6,89			35,39		⊙.
	78 . 14 . 27,65	29,640	50,4	44,6	4 . 33,61	9,22	10,762	6,48	116 . 5 . 53,84		Mars.
32,21	73 . 25 . 33,43	29,636	49,3	43,9	3 . 14,06				111 . 15 . 55,77	+ 6,22	π Sagittarii R.
	31,45								53,79		π Sagittarii.
33,72	65 . 9 . 49,10	29,634	48,3	45,2	2 . 5,39				102 . 59 . 2,77	+ 15,45	α¹ Capricorni R.
	50,13								3,80		α¹ Capricorni.
33,02	65 . 12 . 5,84				2 . 5,61				103 . 1 . 19,73	+ 15,51	α² Capricorni R.
	5,47								19,36		α² Capricorni.
34,30	14 . 13 . 11,67	29,640	47,7	42,3	14,88				52 . 0 . 34,83	+ 32,62	61¹ Cygni R.
	13,87								37,03		61¹ Cygni.
	62 . 54 . 44,55				1 . 54,29	4,67			100 . 43 . 42,45		Juno.
	60 . 29 . 8,95				1 . 43,35				98 . 18 . 0,58	+ 21,70	Σ 2781. *np.*
	59 . 58 . 31,07				1 . 41,25				97 . 47 . 20,60	+ 22,00	⁎ Æ.$21^h.10^m.39^s$.
35,03	− 9 . 42 . 50,84				10,05				28 . 4 . 7,39	+ 31,67	α Cephei R.
	47,18								11,05		α Cephei.
	54 . 19 . 36,82	29,700	51,5	52,4	1 . 20,09	6,92		15 . 59,50	91 . 51 . 58,77		⊙.
	53 . 47 . 40,00				1 . 18,55	6,87			59,46		⊙.
	78 . 11 . 12,05	29,750	50,0	47,5	4 . 31,74	9,16	10,750	6,35	116 . 2 . 36,56		Mars.
33,89	39 . 28 . 21,01	29,902	49,7	50,2	47,96				77 . 16 . 17,25	− 13,28	Regulus R.
	22,40								18,64		Regulus.
	54 . 11 . 0,88	29,912	52,8	54,2	1 . 19,95	6,92		15 . 59,80	92 . 15 . 21,99		⊙.
	54 . 43 . 0,05				1 . 21,53	6,97			23,09		⊙.
32,77	37 . 37 . 32,50	29,908	54,2	53,5	44,60				75 . 25 . 25,38	+ 7,09	α Herculis R.
	31,63								24,51		α Herculis.
	78 . 7 . 32,43	29,924	53,0	51,7	4 . 29,53	9,09	9,634	5,29	115 . 59 . 6,44		Mars.
	55 . 52 . 58,28	30,000	58,7	60,5	1 . 24,30	7,07		16 . 0,70	93 . 25 . 23,09		⊙.
	55 . 20 . 57,87				1 . 22,64	7,03			22,46		⊙.
34,48	− 39 . 17 . 43,06				46,83				− 1 . 31 . 21,61	+ 19,12	Polaris SP. R.
	40,50								19,05		Polaris SP.
32,72	2 . 20 . 45,85	30,056	57,7	54,0	2,38				40 . 7 . 56,51	+ 27,49	θ Cygni R.
	44,88								55,54		θ Cygni.
33,62	41 . 57 . 32,26				52,21				79 . 45 . 32,75	+ 20,05	γ Aquilæ R.
	33,10								33,59		γ Aquilæ.

Coincidence of Micrometer Wire with fixed wire = $10^r,132$, $10^r,137$, $10^r,141$, $10^r,154$, $10^r,157$ at the five wires. From Oct. 2 = $10^r.136$, $10^r,141$, $10^r,145$, $10^r,158$, $10^r,161$.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 1″,6. From Sept. 26 = − 0″,1.

Adopted Zenith Point = 315°. 3′. 33″,20.

Assumed Co-latitude = 37°. 47′. 8″,28.

18—2

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Oct. 2	ρ Draconis R. M. .	150 . 15	1 . 19,1	16,9	16,4	12,7	16,9	16,4	9,420	+ 15,11			150 . 16 . 31,51	G.
	ρ Draconis........	299 . 50	0 . 41,4	34,2	34,9	30,8	35,3	35,1					299 . 50 . 35,28	G.
	☽ S.L. M..........	24 . 10	0 . 7,4	5,1	5,0	0,9	4,8	4,0	13,556	– 1 . 11,10			24 . 8 . 53,43	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	13,701	– 1 . 13,84	+1	+ 2,85	53,54	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	13,838	– 1 . 16,65	+2	+ 5,60	53,48	G.
	α Cephei R. M. ...	144 . 45	0 . 33,1	30,4	28,2	25,0	31,0	30,3	7,571	+ 53,65			144 . 46 . 23,32	G.
	α Cephei	305 . 20	0 . 46,8	39,9	43,0	38,1	40,8	42,0			+1	+ 0,28	305 . 20 . 42,05	G.
Oct. 4	(a) 61¹ Cygni R. M...	120 . 45	4 . 27,8	27,7	25,2	23,0	27,0	27,4	7,538	+ 54,35			120 . 50 . 20,30	G.
	61¹ Cygni........	329 . 15	1 . 47,8	45,4	44,6	41,4	45,7	44,1					329 . 16 . 44,68	G.
	(b) α Equulei R. M...	87 . 25	1 . 47,8	47,4	45,8	43,3	45,8	45,2	5,769	+ 1 . 31,22			87 . 28 . 16,95	G.
	α Equulei........	2 . 35	3 . 49,8	49,9	48,9	45,8	50,1	49,2					2 . 38 . 48,60	G.
	α Cephei R. M....	144 . 40	4 . 30,6	31,0	29,9	27,2	30,7	30,8	4,638	+ 1 . 54,79			144 . 46 . 24,42	G.
	α Cephei.........	305 . 20	0 . 45,8	41,0	43,0	38,8	42,4	42,0					305 . 20 . 42,10	G.
	☽ S.L. M..........	15 . 0	3 . 14,3	14,0	13,0	8,8	12,2	12,9	11,534	– 28,95			15 . 2 . 43,30	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	11,731	– 32,78	+1	+ 3,35	42,82	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	11,859	– 35,40	+2	+ 6,66	43,51	G.
Oct. 5	(a) α Equulei R. M...	87 . 25	2 . 26,7	26,6	23,7	20,9	22,2	24,6	7,635	+ 52,66	+2	– 0,05	87 . 28 . 16,51	G.
	α Equulei........	2 . 35	3 . 49,8	51,9	49,8	46,0	50,2	49,2			+3	+ 0,11	2 . 38 . 49,24	G.
	α Cephei R. M....	144 . 45	1 . 18,0	18,0	15,4	12,9	15,6	16,1	9,739	+ 8,47			144 . 46 . 24,35	G.
	α Cephei..........	305 . 20	0 . 45,5	42,9	43,4	38,0	41,0	41,6					305 . 20 . 42,00	G.
	π² Cygni R. M....	131 . 25	0 . 46,2	47,2	43,9	40,6	43,0	43,1	8,152	+ 41,54			131 . 26 . 25,47	G.
	π² Cygni.........	318 . 40	0 . 43,1	40,5	40,1	35,7	38,8	38,9					318 . 40 . 39,45	G.
	☽ S.L. M..........	10 . 0	4 . 23,4	23,9	22,3	17,8	22,1	22,6	10,760	– 12,82			10 . 4 . 8,80	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,917	– 15,82	+1	+ 3,42	9,22	G.
	☽ S.L. M..........	...	...	...	...	...	...	...	11,083	– 19,22	+2	+ 6,81	9,21	G.
	(c) Polaris R. M.....	171 . 15	3 . 19,6	20,0	19,1	13,3	18,4	19,0	9,094	+ 21,90		– 0,54	171 . 18 . 39,29	G.
	Polaris...........	278 . 45	3 . 31,9	30,9	28,1	23,8	26,8	28,1				+ 0,41	278 . 48 . 28,36	G.
Oct. 6	Mars S.L..........	32 . 40	1 . 41,9	45,4	40,0	38,9	41,4	41,1					32 . 41 . 41,30	G.
Oct. 7	(d) ☉ N.L. M........	12 . 20	1 . 27,1	26,9	24,8	22,2	26,0	25,0	13,432	– 1 . 8,52			12 . 20 . 16,68	G.
Oct. 9	ζ Cephei R. M....	140 . 10	4 . 27,1	23,2	24,9	17,4	22,1	23,1	2,809	+ 2 . 32,92			140 . 16 . 55,49	G.
	ζ Cephei..........	309 . 50	0 . 17,7	13,0	13,3	8,8	9,0	11,6					309 . 50 . 12.22	G.
	ε Cephei R. M....	139 . 5	0 . 22,5	19,8	19,7	14,2	16,9	18,7	5,390	+ 1 . 39,11			139 . 6 . 57,71	G.
	ε Cephei..........	311 . 0	0 . 16,0	11,8	12,2	7,4	9,0	9,3					311 . 0 . 10,93	G.
	(e) ζ Aquarii. *np.* R..	82 . 0	3 . 17,0	12,0	13,0	8,2	9,5	12,9					82 . 3 . 11,82	G.
	ζ Aquarii. *np*.....	8 . 0	3 . 57,5	54,0	54,7	49,0	52,8	53,5					8 . 3 . 53,23	G.
	☽ N.L. M.........	351 . 15	0 . 38,7	31,8	35,9	28,3	33,1	32,1	10,740	– 12,59	–2	– 4,97	351 . 15 . 15,71	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,872	– 15,24	–1	– 2,53	15,50	G.
	☽ N.L. M.........	...	...	...	...	...	...	...	10,988	– 17,57			15,70	G.
Oct. 10	(f) ☉ S.L. M.........	14 . 0	2 . 27,2	23,8	24,5	20,0	22,0	23,4	14,153	– 1 . 23,55			14 . 0 . 59,72	G.
	☉ N.L............	13 . 25	3 . 58,0	56,8	57,0	51,2	53,8	55,0					13 . 28 . 54,95	G.
Oct. 12	α Cephei R. M....	144 . 45	0 . 34,2	33,0	31,8	26,9	31,1	31,0	7,464	+ 55,97			144 . 46 . 27,32	G.
	α Cephei..........	305 . 20	0 . 44,8	40,9	42,8	36,2	39,4	39,6					305 . 20 . 40,63	G.
Oct. 13	☉ N.L. M.	14 . 35	2 . 19,6	19,1	18,0	13,1	17,0	17,0	11,508	– 28,32			14 . 36 . 49,01	G.
	☉ S.L.	15 . 5	3 . 54,8	54,0	55,1	48,9	53,0	52,8					15 . 8 . 53,17	G.
	Mars N.L.........	32 . 0	1 . 31,7	32,2	29,2	25,0	29,1	30,2					32 . 1 . 29,60	G.
	(g) Σ 2651............	351 . 30	3 . 64,1	60,5	64,0	54,7	60,8	60,0					351 . 34 . 0,75	G.
	ω² Cygni R. M. ...	131 . 10	4 . 23,1	22,4	22,0	17,3	19,8	21,7	2,866	+ 2 . 31,81			131 . 16 . 52,93	G.
	ω² Cygni.........	318 . 50	0 . 18,8	12,4	15,4	8,2	12,4	12,3					318 . 50 . 13,25	G.
	α Cygni R. M.....	127 . 30	3 . 8,8	8,7	7,8	2,8	5,7	5,5	5,634	+ 1 . 34,11			127 . 34 . 40,71	G.
	α Cygni..........	322 . 30	2 . 29,0	24,6	27,2	19,2	24,1	24,8					322 . 32 . 24,85	G.
	η Cephei R. M....	144 . 5	0 . 21,0	20,9	19,8	14,8	17,9	18,8	11,150	– 20,86			144 . 4 . 58,01	G.
	η Cephei..........	306 . 0	2 . 13,6	10,0	11,6	4,2	9,0	9,0					306 . 2 . 9,60	G.
	(h) ⁎ Æ. $21^h.2^m.19^s$...	17 . 10	3 . 30,5	28,2	29,9	21,3	27,2	26,9					17 . 13 . 27,38	G.

Runs taken Oct. 6, 22^h.
Oct. 5, 12^h. Molyneux fast on Hardy, 44^s.
Runs and Coincidences at the five wires taken Oct. 15, 22^h.

(*a*) Cloudy. (*b*) Faint from clouds. (*c*) Times of bisection by Molyneux, $1^h.1^m.16^s$ and $1^h.1^m.41^s$. (*d*) Very cloudy: the other Limb quite hid. (*e*) Accidentally on the fixed wire. The star bisected is rather the smaller of the two. (*f*) Cloudy, but good. (*g*) Seemed double, but was observed as single. (*h*) Extremely faint.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
33,40	−15.12.58,31				15,81				22.33.54,16	+30,20	ρ Draconis R.
	57,92								54,55		ρ Draconis.
	69. 5.20,23	30,068	57,0	53,8					105.47.32,92		☽.
	20,34				2.31,02	52.10,60		15.16,01	33,03		☽.
	20,28								32,97		☽.
32,69	−9.42.50,12	30,064	56,3	52,4	9,98				28. 4. 8,18	+32,85	α Cephei R.
	51,15								7,15		α Cephei.
32,49	14.13.12,90	30,096	60,3	59,4	14,59				52. 0.35,77	+33,77	61¹ Cygni R.
	11,48								34,35		61¹ Cygni.
32,78	47.35.16,25				1. 2,93				85.23.27,46	+25,03	α Equulei R.
	15,40								26,61		α Equulei.
33,26	−9.42.51,22				9,85				28. 4. 7,21	+33,31	α Cephei R.
	51,10								7,33		α Cephei.
	59.59.10,10	30,100	59,6	57,6					96.45.36,77		☽.
	9,62				1.39,68	47.23,21		14.58,08	36,29		☽.
	10,31								36,98		☽.
32,88	47.35.16,69	29,944	59,4	57,0	1. 2,92				85.23.27,89	+25,06	α Equulei R.
	16,04								27,24		α Equulei.
33,18	−9.42.51,15				9,85				28. 4. 7,28	+33,54	α Cephei R.
	51,20								7,23		α Cephei.
32,46	3.37. 7,73				3,64				41.24.19,65	+33,61	π² Cygni R.
	6,25								18,17		π² Cygni.
	55. 0.35,60	29,920	57,7	54,6					91.49.44,66		☽.
	36,02				1.22,37	44.29,93		14.51,66	45,08		☽.
	36,01								45,07		☽.
33,83	−36.15. 6,09	29,864	56,5	51,1	42,58				1.31.19,61	+20,42	Polaris R.
	4,84								20,86		Polaris.
	77.38. 8,10	29,598	59,9	60,3	4.11,69	8,68	10,889	7,75	115.29.11,64		Mars.
	57.16.43,48	29,530	62,6	63,8	1.26,90	7,20		16. 2,00	95.21.13,46		☉.
33,86	−5.13.22,23	29,642	50,9	45,7	5,33				32.33.40,72	+34,97	ζ Cephei R.
	21,04								41,91		ζ Cephei.
34,32	−4. 3.24,45				4,14				33.43.39,69	+34,93	ε Cephei R.
	22,33								41,81		ε Cephei.
32,53	53. 0.21,44				1.17,24				90.48.46,96	+27,58	ζ Aquarii. *np.* R.
	19,97								45,49		ζ Aquarii. *np.*
	36.11.42,45	29,756	48,0	42,6					73.42.36,65		☽.
	42,24				43,08	31.38,98		14.41,82	36,44		☽.
	42,44								36,64		☽.
	58.57.26,46	29,826	53,2	54,2	1.35,48	7,34		16. 2,90	96.29.59,98		☉.
	58.25.21,69				1.33,51	7,30			59,08		☉.
33,98	−9.42.54,06	29,446	49,3	42,7	9,98				28. 4. 4,24	+34,91	α Cephei R.
	52,63								5,67		α Cephei.
	59.33.15,75	29,606	47,4	45,7	1.38,75	7,39		16. 3,80	97.37.59,19		☉.
	60. 5.19,91				1.40,88	7,43			57,84		☉.
	76.57.56,34	29,588	46,7	42,8	4. 7,68	8,29	9,630	+5,41	114.49. 9,42		Mars.
	36.30.27,49	29,576	45,8	41,5	43,41				74.18.19,18	+24,08	Σ 2651.
33,09	3.46.40,33				3,88				41.33.52,49	+31,89	ω² Cygni R.
	39,99								52,15		ω² Cygni.
32,78	7.28.52,55				7,71				45.16. 8,54	+32,08	α Cygni R.
	51,59								7,58		α Cygni.
38,81	−9. 1.24,75				9,32				28.45.34,21	+34,71	η Cephei R.
	23,66								35,30		η Cephei.
	62. 9.54,12	29,566	44,7	41,3	1.50,69				99.58.53,09	+20,44	* Æ.$21^h.2^m.19^s$.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,136, 10ʳ,141, 10ʳ,145, 10ʳ,158, 10ʳ,161 at the five wires. From Oct. 12 = 10ʳ,140, 10ʳ,145, 10ʳ,149, 10ʳ,162, 10ʳ,165.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 0″,1. From Oct. 4 = − 2″,7. From Oct. 12 = + 0″,5.

Adopted Zenith Point = 315°.3′.33″,20. From Oct. 9 = 315°.3′.33″,26.

Assumed Co-latitude = 37°.47′.8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Oct. 13	(a) Juno............	19 . 35	3 . 24,4	22,8	23,4	15,8	21,0	21,1					19 . 38 . 21,47	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 16,2	13,9	14,0	8,8	11,1	14,2	11,129	− 20,43			145 . 25 . 52,62	G.
	α Ursæ Majoris...	304 . 40	1 . 19,4	15,4	18,2	9,2	14,2	13,7					304 . 41 . 15,03	G.
Oct. 14	☉ S.L. M.........	15 . 30	2 . 28,0	25,0	27,8	20,9	25,0	25,1	13,325	− 1 . 6,20			15 . 31 . 19,13	G.
	☉ N.L...........	14 . 55	4 . 15,9	16,5	15,7	9,3	13,9	14,0					14 . 59 . 14,28	G.
	α Cor. Bor. R. M..	110 . 5	1 . 33,0	32,2	30,7	26,1	29,3	30,7	11,911	− 36,72			110 . 5 . 53,63	G.
	α Coronæ Borealis.	340 . 0	1 . 12,4	10,0	11,8	5,6	10,2	9,1					340 . 1 . 9,87	G.
	ψ Androm. R. M.	128 . 20	3 . 20,7	22,1	19,8	14,1	17,4	18,1	7,161	+ 1 . 2,29			128 . 24 . 21,04	G.
	ψ Andromedæ....	321 . 40	2 . 49,2	48,0	48,3	41,9	46,9	47,0					321 . 42 . 46,93	G.
	α Androm. R. M. .	111 . 0	3 . 25,2	24,7	24,2	17,9	21,1	23,8	5,155	+ 1 . 44,10			111 . 5 . 6,97	G.
	α Andromedæ....	339 . 0	1 . 63,1	58,1	63,1	54,8	59,7	59,8					339 . 1 . 59,80	G.
	γ Pegasi R. M....	97 . 10	1 . 30,0	28,9	28,4	23,8	27,8	28,0	12,580	− 50,68			97 . 10 . 37,15	G.
	γ Pegasi.........	352 . 55	1 . 31,9	29,9	31,3	24,8	28,9	30,0					352 . 56 . 29,48	G.
Oct. 16	☉ S.L. M.........	16 . 15	2 . 20,6	19,0	18,7	12,1	17,9	18,5	14,216	− 1 . 24,78			16 . 15 . 53,05	G.
	☉ N.L.	15 . 40	3 . 46,9	46,0	47,4	39,3	44,9	45,6					15 . 43 . 45,08	G.
	(b) Arcturus R. M....	102 . 50	2 . 24,9	24,2	23,4	18,4	22,9	22,8	13,383	− 1 . 7,41			102 . 51 . 15,39	G.
	Arcturus.........	347 . 15	0 . 51,9	48,8	51,8	43,1	50,0	47,9					347 . 15 . 48,93	G.
	Mars S.L.........	31 . 40	1 . 27,9	28,0	26,0	20,0	26,4	26,9					31 . 41 . 25,88	G.
	α Aquilæ R. M....	91 . 15	3 . 28,1	27,1	27,0	19,1	26,3	26,0	7,114	+ 1 . 3,26			91 . 19 . 28,91	G.
	α Aquilæ...	358 . 45	2 . 39,9	37,8	39,7	32,3	36,7	37,4					358 . 47 . 37,35	G.
	⁎ Æ. $19^h.47^m.58^s$.	345 . 10	4 . 10,7	6,5	10,0	0,3	7,8	6,9					345 . 14 . 7,10	G.
	61¹ Cygni R. M...	120 . 45	4 . 35,9	35,8	34,9	29,0	33,8	34,8	7,830	+ 48,34			120 . 50 . 22,46	G.
	61¹ Cygni........	329 . 15	1 . 47,2	43,5	45,4	38,1	43,5	43,4					329 . 16 . 43,55	G.
	⁎ Æ. $21^h.2^m.19^s$..	17 . 10	3 . 27,0	25,3	26,5	18,0	24,7	25,0					17 . 13 . 24,47	G.
	(c) Juno	19 . 50	2 . 15,4	14,1	13,9	8,0	12,3	13,1					19 . 52 . 12,83	G.
	α Cephei R. M....	144 . 45	0 . 50,7	50,0	49,9	43,7	49,2	47,9	8,310	+ 38,34			144 . 46 . 26,92	G.
	α Cephei.........	305 . 20	0 . 44,0	40,4	42,9	34,9	39,0	40,1					305 . 20 . 40,23	G.
Oct. 17	☽ S.L. M.........	355 . 40	1 . 14,1	10,7	14,6	6,1	12,1	11,7	10,733	− 12,36	−2	+ 6,99	355 . 41 . 6,20	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,570	− 8,86	−1	+ 3,46	6,17	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,432	− 5,90			5,67	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,264	− 2,12	+1	− 3,40	6,05	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,118	+ 0,98	+2	− 6,73	5,82	G.
	14 Leonis........	356 . 35	4 . 38,0	34,0	36,9	29,5	34,1	36,4					356 . 39 . 34,90	G.
	Regulus R. M. ...	95 . 35	1 . 49,0	45,3	47,2	40,1	44,8	45,2	14,683	− 1 . 34,51			95 . 35 . 10,79	G.
	Regulus..........	354 . 30	1 . 59,2	55,1	59,0	49,4	55,8	55,9					354 . 31 . 55,77	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 28,5	27,5	26,8	21,2	25,4	27,8	11,825	− 34,94			145 . 25 . 51,28	G.
	α Ursæ Majoris...	304 . 40	1 . 19,7	15,2	17,8	10,4	14,7	15,5					304 . 41 . 15,57	G.
Oct. 18	☉ N.L. M.	16 . 25	3 . 38,9	38,4	39,3	31,7	37,8	38,9	12,621	− 51,53			16 . 27 . 46,04	G.
	☉ S.L.	16 . 55	4 . 55,3	54,2	55,9	47,4	53,8	53,7					16 . 59 . 53,47	G.
	α Cor. Bor. R. M..	110 . 0	4 . 51,3	51,7	51,6	44,8	48,3	49,5	7,108	+ 1 . 3,38			110 . 5 . 53,00	G.
	α Coronæ Borealis.	340 . 0	1 . 13,8	10,6	13,0	5,3	12,1	10,9			+1	+ 0,08	340 . 1 . 11,05	G.
	α Lyræ R. M.....	121 . 25	3 . 16,9	14,9	16,6	9,5	12,9	14,4	5,849	+ 1 . 29,63			121 . 29 . 43,88	G.
	α Lyræ...........	328 . 35	2 . 24,2	20,1	21,9	15,0	22,1	20,9					328 . 37 . 20,73	G.
	Mars S.L.........	31 . 25	1 . 53,9	53,7	52,3	45,6	50,8	52,1					31 . 26 . 51,43	G.
	δ Cygni R. M.....	127 . 35	1 . 44,7	42,8	43,5	36,2	42,8	41,8	11,209	− 22,09			127 . 36 . 19,91	G.
	δ Cygni..........	322 . 30	0 . 48,8	44,1	46,6	39,9	45,3	45,0					322 . 30 . 44,97	G.
	⁎ Æ. $21^h.2^m.19^s$..	17 . 10	3 . 26,6	25,1	26,0	17,7	23,4	24,9					17 . 13 . 24,00	G.
	(c) Juno...........	20 . 0	0 . 34,1	32,3	32,9	26,4	31,9	31,8					20 . 0 . 31,58	G.
	α Cephei R. M....	144 . 45	0 . 35,2	33,9	33,6	27,5	33,7	34,0	7,569	+ 53,78			144 . 46 . 26,78	G.
	α Cephei.........	305 . 20	0 . 43,9	40,0	42,9	35,0	39,9	40,4					305 . 20 . 40,37	G.
	(a) ☽ S.L. M.........	1 . 0	0 . 46,6	43,7	46,8	39,1	44,4	44,3	8,991	+ 23,94	−2	+ 7,83	1 . 1 . 15,94	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	8,810	+ 27,82	−1	+ 3,90	15,89	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	8,658	+ 31,08			15,25	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	8,447	+ 35,74	+1	− 3,86	16,05	G.
	☽ S.L M.........	...	...	...	...	...	...	...	8,279	+ 39,32	+2	− 7,69	15,80	G.
	(a) ρ Leonis.........	357 . 5	3 . 64,3	61,1	64,8	56,6	61,0	62,9					357 . 9 . 1,85	G.
	α Ursæ Maj. R. M.	145 . 25	1 . 23,8	22,1	22,7	15,6	21,1	22,3	11,623	− 30,72			145 . 25 . 50,56	G.
	α Ursæ Majoris...	304 . 40	1 . 19,0	15,1	19,1	10,1	14,9	15,9			+1	+ 0,29	304 . 41 . 15,99	G.

(a) Faint.
(b) Very unsteady.
(c) Extremely faint.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	64 . 34 . 48,21				2 . 2,86	4,40			102 . 23 . 54,95		Juno.
33,83	− 10 . 22 . 19,36	29,684	43,7	41,5	10,78				27 . 24 . 38,14	− 28,26	α Ursæ Maj. R.
	18,23								39,27		α Ursæ Majoris.
	60 . 27 . 45,87	29,708	46,4	46,1	1 . 42,67	7,46		16 . 4,10	98 . 0 . 25,26		☉.
	59 . 55 . 41,02				1 . 40,50	7,42			26,48		☉.
31,75	24 . 57 . 39,63	29,724	48,4	48,8	27,04				62 . 45 . 14,95	− 2,62	α Cor. Bor. R.
	36,61								11,93		α Coronæ Bor.
33,99	6 . 39 . 12,22	29,728	44,5	37,6	6,94				44 . 26 . 27,44	+ 33,86	ψ Androm. R.
	13,67								28,89		ψ Andromedæ.
33,39	23 . 58 . 26,29			38,0	26,42				61 . 46 . 0,99	32,37	α Andromedæ R.
	26,54								1,24		α Andromedæ.
33 32	37 . 52 . 56,11				46,19				75 . 40 . 50,58	+ 31,31	γ Pegasi R.
	56,22								50,69		γ Pegasi.
	61 . 12 . 19,79	29,606	44,1	42,0	1 . 46,47	7,52		16 . 4,60	98 . 45 . 2,32		☉.
	60 . 40 . 11,82				1 . 44,07	7,48			1,29		☉.
32,16	32 . 12 . 17,87	29,596	44,6	42,5	36,90				70 . 0 . 3,05	− 12,53	Arcturus R.
	15,67								0,85		Arcturus.
	76 . 37 . 52,62	29,590	43,2	37,0	4 . 4,54	8,13	10,711	5,86	114 . 28 . 51,45		Mars.
33,13	43 . 44 . 4,35			33,9	57,02				81 . 32 . 9,65	+ 20,03	α Aquilæ R.
	4,09								9,39		α Aquilæ.
	30 . 10 . 33,84				34,67				67 . 58 . 16,79	+ 24,29	∗Æ.19^h.47^m.58^s.
33,01	14 . 13 . 10,80	29,570	40,3	31,8	15,17				52 . 0 . 34,25	+ 35,29	61¹ Cygni R.
	10,29								33,74		61¹ Cygni.
	62 . 9 . 51,21				1 . 52,94				99 . 58 . 52,43	+ 20,34	∗Æ.21^h.2^m.19^s.
	64 . 48 . 39,57				2 . 6,66	4,34			102 . 37 . 50,17		Juno.
33,58	− 9 . 42 . 53,66				10,25				28 . 4 . 4,37	+ 35,59	α Cephei R.
	53,03								5,00		α Cephei.
	40 . 37 . 32,94	29,704	40,5	36,5					77 . 32 . 2,70		☽.
	32,91								2,67		☽.
	32,41				51,06	37 . 38,88		15 . 50,70	2,17		☽.
	32,79								2,55		☽.
	32,56								2,32		☽.
	41 . 36 . 1,64	29,724	40,0	37,4	52,77				79 . 24 . 2,69	− 13,81	14 Leonis.
33,28	39 . 28 . 22,47	29,736	40,0	38,2	48,89				77 . 16 . 19,64	− 15,83	Regulus R.
	22,51								19,68		Regulus.
33,43	− 10 . 22 . 18,02	29,790	40,4	39,8	10,86				27 . 24 . 39,40	− 29,54	α Ursæ Maj. R.
	17,69								39,73		α Ursæ Majoris.
	61 . 24 . 12,78	29,860	44,0	44,1	1 . 47,68	7,54		16 . 5,10	99 . 29 . 6,30		☉.
	61 . 56 . 20,21				1 . 50,09	7,58			5,90		☉.
32,03	24 . 57 . 40,26	29,894	44,8	45,1	27,40				62 . 45 . 15,94	− 3,34	α Cor. Bor. R.
	37,79								13,47		α Coronæ Bor.
32,31	13 . 33 . 49,38	29,978	43,2	40,0	14,40				51 . 21 . 12,06	+ 20,24	α Lyræ R.
	47,47								10,15		α Lyræ.
	76 . 23 . 18,17	30,000	42,3	38,2	4 . 2,86	8,02	10,732	6,08	114 . 14 . 15,21		Mars.
32,44	7 . 27 . 13,25				7,84				45 . 14 . 29,47	+ 28,18	δ Cygni R.
	11,71								27,83		δ Cygni.
	62 . 9 . 50,74	30,036	40,8	37,5	1 . 53,34				99 . 58 . 52,36	+ 20,28	∗Æ.21^h.2^m.19^s.
	64 . 56 . 58,32				2 . 7,91	4,30			102 . 46 . 10,21		Juno.
33,58	− 9 . 42 . 53,52				10,29				28 . 4 . 4,47	+ 35,93	α Cephei R.
	52,89								5,10		α Cephei.
	45 . 57 . 42,68	30,250	39,6	36,0					82 . 47 . 29,38		☽.
	42,63								29,33		☽.
	41,99				1 . 2,71	42 . 17,58		16 . 6,71	28,69		☽.
	42,79								29,49		☽.
	42,54								29,24		☽.
	42 . 5 . 28,59				54,79				79 . 53 . 31,66	− 15,94	ρ Leonis.
33,28	− 10 . 22 . 17,30	30,266	39,4	38,0	11,07				27 . 24 . 39,91	− 29,86	α Ursæ Maj. R.
	17,27								39,94		α Ursæ Majoris.

Coincidence of Micrometer Wire with fixed Wire = 10^r,140, 10^r,145, 10^r,149, 10^r,162, 10^r,165 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = + 0″,5.
Adopted Zenith Point = 315°. 3′. 33″,26.
Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Oct. 18	(a) γ Ursæ Maj. R. M.	137 . 25	0 . 29,0	28,2	28,3	22,9	26,3	28,2	13,519	− 1 . 10,24			137 . 24 . 16,91	G.
	γ Ursæ Majoris...	312 . 40	2 . 54,7	49,9	53,1	43,6	49,7	49,4					312 . 42 . 50,12	G.
Oct. 19	⊙ N.L. M........	16 . 50	0 . 31,0	31,0	30,0	24,0	31,1	29,7	12,754	− 54,30			16 . 49 . 35,17	G.
	⊙ S.L............	17 . 20	1 . 43,0	43,8	42,9	36,0	42,5	40,8					17 . 21 . 41,53	G.
	Mars N.L.........	31 . 15	4 . 7,8	9,7	7,5	1,4	6,3	7,7					31 . 19 . 6,80	G.
	δ Cygni R. M.	127 . 35	1 . 27,4	27,7	26,5	20,3	26,7	25,0	10,417	− 5,59			127 . 36 . 20,03	G.
	δ Cygni...........	322 . 30	0 . 48,7	46,0	46,8	40,5	45,5	44,8					322 . 30 . 45,40	G.
	α Cygni R. M.....	127 . 30	3 . 25,9	25,7	24,9	18,7	24,1	24,7	6,460	+ 1 . 16,90			127 . 34 . 40,95	G.
	α Cygni..........	322 . 30	2 . 27,1	23,3	24,3	17,9	23,6	23,9					322 . 32 . 23,38	G.
	η Cephei R. M. ...	144 . 0	4 . 13,9	15,3	13,6	6,9	13,6	12,6	8,023	+ 44,32			144 . 4 . 57,04	G.
	η Cephei.........	306 . 0	2 . 13,0	10,3	10,3	3,7	9,4	8,9					306 . 2 . 9,30	G.
	(b) Juno	20 . 0	4 . 29,8	29,5	29,7	22,1	28,3	28,4					20 . 4 . 28,03	G.
	(c) Polaris R. M......	171 . 15	3 . 24,6	26,3	25,6	19,2	25,0	25,1	9,200	+ 19,78		− 0,32	171 . 18 . 43,81	G.
	Polaris...........	278 . 45	3 . 28,7	25,9	26,0	18,3	22,2	24,6				+ 0,24	278 . 48 . 24,57	G.
	(d) Polaris SP. R. M. .	174 . 20	2 . 24,2	23,8	23,9	18,9	24,6	24,0	13,790	− 1 . 15,89		+ 1,05	174 . 21 . 8,43	G.
	Polaris SP........	275 . 45	0 . 63,8	62,0	62,9	56,0	61,6	60,0				− 0,88	275 . 46 . 0,19	G.
Oct. 20	⊙ S.L. M.	17 . 45	0 . 29,1	29,0	28,3	22,9	28,7	27,8	16,028	− 2 . 2,55			17 . 43 . 25,08	G.
	⊙ N.L............	17 . 10	1 . 19,3	20,0	18,3	13,9	17,4	18,0					17 . 11 . 17,83	G.
Oct. 21	⊙ N.L. M........	17 . 30	4 . 24,9	24,2	22,5	17,0	22,7	23,6	14,635	− 1 . 33,52			17 . 32 . 49,03	G.
	⊙ S.L............	18 . 0	4 . 57,1	58,7	58,8	51,4	58,0	56,8					18 . 4 . 56,88	G.
	α Androm. R. M. .	111 . 0	3 . 19,9	20,6	18,5	13,9	19,1	18,7	5,010	+ 1 . 47,12			111 . 5 . 5,62	G.
	α Andromedæ....	339 . 0	1 . 63,0	59,8	62,8	53,9	60,1	60,0					339 . 1 . 59,97	G.
	(e) γ Pegasi R. M. ...	97 . 10	1 . 24,9	24,4	23,0	19,9	22,2	24,0	12,366	− 46,22			97 . 10 . 36,86	G.
	γ Pegasi.........	352 . 55	1 . 31,0	29,3	29,9	24,0	29,9	29,9					352 . 56 . 29,03	G.
	Polaris R. M......	171 . 15	3 . 26,8	26,4	26,4	20,2	25,3	27,1	9,269	+ 18,35			171 . 18 . 43,77	G.
	Polaris............	278 . 45	3 . 26,1	23,0	22,9	16,4	21,5	21,9					278 . 48 . 22,02	G.
Oct. 26	(f) Polaris SP. R. M. .	174 . 20	2 . 33,3	31,0	32,2	26,3	31,4	32,5	14,280	− 1 . 26,28		+ 0,51	174 . 21 . 5,56	G.
	Polaris SP........	275 . 45	0 . 65,2	61,9	64,0	56,2	60,3	60,7				− 0,38	275 . 46 . 1,09	G.
Oct. 27	⊙ N.L. M........	19 . 40	0 . 40,9	39,4	39,5	36,2	38,6	39,4	16,524	− 2 . 13,04			19 . 38 . 26,01	G.
	⊙ S.L.	20 . 10	0 . 40,4	38,4	38,3	33,9	37,3	37,9					20 . 10 . 37,75	G.
Oct. 28	o Sagittarii........	29 . 10	0 . 57,0	54,8	55,9	49,8	54,3	54,8					29 . 10 . 54,52	G.
	(g) ☽ S.L. M.........	28 . 40	2 . 13,9	13,7	11,9	7,0	11,1	11,1	10,784	− 13,51	−2	− 4,55	28 . 41 . 53,57	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,890	− 15,73	−1	− 2,22	53,68	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	10,984	− 17,57			54,06	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,101	− 19,84	+1	+ 2,10	53,89	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,140	− 20,53	+2	+ 4,09	55,19	G.
	e^1 Sagittarii	23 . 50	2 . 39,7	39,3	39,0	32,2	36,8	37,6					23 . 52 . 37,67	G.
	57 Sagittarii......	26 . 35	4 . 40,5	42,0	39,1	32,8	39,1	40,1					26 . 39 . 39,33	G.
	Mars S.L.........	30 . 0	1 . 52,9	51,0	51,3	44,7	50,0	49,9					30 . 1 . 50,12	G.
Nov. 3	⊙ N.L. M........	21 . 55	2 . 28,3	27,0	25,9	20,0	24,2	25,3	14,640	− 1 . 33,79			21 . 55 . 51,54	G.
	⊙ S.L............	22 . 25	2 . 66,6	65,5	65,5	58,9	63,7	64,3					22 . 28 . 4,35	G.
	Mars N.L.........	29 . 0	0 . 36,1	36,6	34,6	29,8	34,9	35,1					29 . 0 . 34,57	G.
	α Cygni R. M.....	127 . 30	3 . 15,5	15,0	14,0	8,3	12,8	13,2	5,940	+ 1 . 27,57			127 . 34 . 40,99	G.
	α Cygni..........	322 . 30	2 . 26,5	24,6	24,6	18,0	23,1	23,3					322 . 32 . 23,55	G.
	α Cephei R. M....	144 . 45	1 . 25,2	25,8	23,6	18,9	24,0	23,6	9,925	+ 4,51			144 . 46 . 28,14	G.
	α Cephei.........	305 . 20	0 . 40,9	37,8	39,6	32,4	38,2	37,0					305 . 20 . 37,70	G.
	(h) ☽ S.L. M.........	1 . 40	2 . 13,9	11,9	13,0	6,9	12,4	10,8	11,686	− 32,19			1 . 41 . 39,48	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,822	− 34,87	+1	+ 3,25	40,05	G.
	☽ S.L. M.........	...	...	...	...	...	...	...	11,979	− 38,02	+2	+ 6,54	40,19	G.
	(i) Polaris SP. R. M. .	174 . 20	2 . 32,7	30,0	31,4	25,0	30,7	30,9	14,306	− 1 . 26,81		+ 1,21	174 . 21 . 4,73	G.
	Polaris SP........	275 . 45	0 . 66,0	63,4	65,6	59,7	62,9	62,9				− 0,99	275 . 46 . 2,51	G.
	η Ursæ Maj. R. M.	132 . 55	1 . 16,2	14,2	13,8	10,1	12,2	13,5	10,020	+ 2,52			132 . 56 . 15,95	G.
	η Ursæ Majoris...	317 . 10	0 . 51,1	47,3	48,8	43,0	48,6	46,1					317 . 10 . 47,55	G.

Oct. 19, 11ʰ, Molyneux fast on Hardy, 54ˢ,0. Oct. 19, 23ʰ, 54ˢ,5. Oct. 26, 23ʰ, 58ˢ,0. Nov. 3, 22ʰ, 64ˢ,8.
Runs and Coincidences at the five wires taken Nov. 8, 23ʰ.

(a) Microscope F was gently struck just after being read off. (b) Faint. (c) Times by Molyneux, 1ʰ. 2ᵐ. 10ˢ and 1ʰ. 2ᵐ. 30ˢ. (d) Times by Molyneux, 13ʰ. 0ᵐ. 10ˢ and 13ʰ. 0ᵐ. 32ˢ. (e) Indefinite. (f) Times by Molyneux, 13ʰ. 1ᵐ. 36ˢ and 13ʰ. 2ᵐ. 2ˢ. (g) Not satisfactory. (h) Very cloudy. (i) Times by Molyneux, 13ʰ. 0ᵐ. 0ˢ and 13ʰ. 0ᵐ. 27ˢ.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
33,52	− 2 . 20 . 43,65	30,280	40,9	40,8	2,46				35 . 26 . 22,17	− 26,15	γ Ursæ Maj. R.
	43,14								22,68		γ Ursæ Majoris.
	61 . 46 . 1,91	30,298	44,3	46,3	1 . 50,40	7,57		16 . 5,40	99 . 50 . 58,42		☉.
	62 . 18 . 8,27				1 . 52,90	7,60			56,45		☉.
	76 . 15 . 33,54	30,322	44,6	41,0	4 . 1,72	7,97	9,640	5,31	114 . 6 . 40,88		Mars.
32,72	7 . 27 . 13,23				7,88				45 . 14 . 29,39	+ 28,17	δ Cygni R.
	12,14								28,30		δ Cygni.
32,17	7 . 28 . 52,31		43,7	40,8	7,91				45 . 16 . 8,50	+ 32,58	α Cygni R.
	50,12								6,31		α Cygni.
33,42	− 9 . 1 . 23,78				9,57				28 . 45 . 34,93	+ 35,43	η Cephei R.
	23,96								34,75		η Cephei.
	65 . 0 . 54,77		43,3	39,7	2 . 8,91	4,28			102 . 50 . 7,68		Juno.
34,19	− 36 . 15 . 10,55	30,304	39,8	33,4	44,82				1 . 31 . 12,91	+ 25,82	Polaris R.
	8,69								14,77		Polaris
34,31	− 39 . 17 . 35,17	30,212	44,9	44,9	48,67				− 1 . 31 . 15,56	+ 25,97	Polaris SP. R.
	33,07								13,46		Polaris SP.
	62 . 39 . 51,82	30,200	45,7	47,4	1 . 54,01	7,63		16 . 5,60	100 . 12 . 40,88		☉.
	62 . 7 . 44,57				1 . 51,17	7,59			42,03		☉.
	62 . 29 . 15,77	29,806	47,2	51,5	1 . 50,76	7,62		16 . 5,90	100 . 34 . 13,09		☉.
	63 . 1 . 23,62				1 . 53,31	7,66			11,65		☉.
32,79	23 . 58 . 27,64	29,994	46,7	43,7	26,34				61 . 46 . 2,26	+ 33,36	α Andromedæ R.
	26,71								1,33		α Andromedæ.
32,94	37 . 52 . 56,40				46,06				75 . 40 . 50,74	+ 31,78	γ Pegasi R.
	55,77								50,11		γ Pegasi.
32,89	− 36 . 15 . 10,51		45,7	42,8	43,50				1 . 31 . 14,27	+ 26,52	Polaris R.
	11,24								13,54		Polaris.
33,32	− 39 . 17 . 32,30	29,648	46,1	43,6	47,89				− 1 . 31 . 11,91	+ 28,52	Polaris SP. R.
	32,17								11,78		Polaris SP.
	64 . 34 . 52,75	29,638	47,5	45,6	2 . 2,06	7,78		16 . 7,50	102 . 40 . 2,81		☉.
	65 . 7 . 4,49				2 . 5,04	7,81			2,50		☉.
	74 . 7 . 21,26	29,080	46,7	44,3	3 . 18,87				111 . 57 . 48,41	+ 5,35	o Sagittarii.
	73 . 38 . 20,31			43,8					110 . 17 . 37,10		☽.
	20,42								37,21		☽.
	20,80				3 . 13,05	55 . 19,29		15 . 45,25	37,59		☽.
	20,63								37,42		☽.
	21,93								38,72		☽.
	68 . 49 . 4,41			43,5	2 . 27,16				106 . 38 . 39,85	+ 10,26	e' Sagittarii.
	71 . 36 . 6,07				2 . 50,98				109 . 26 . 5,33	+ 10,24	57 Sagittarii.
	74 . 58 . 16,86	29,100	45,3	43,2	3 . 30,97	7,51	10,777	6,64	112 . 48 . 41,96		Mars.
	66 . 52 . 18,84	29,612	48,4	49,4	2 . 14,48	7,93		16 . 9,30	104 . 57 . 42,97		☉.
	67 . 24 . 31,65				2 . 17,99	7,97			40,65		☉.
	73 . 57 . 1,87	29,600	50,6	48,1	3 . 18,62	7,22	9,649	5,13	111 . 47 . 26,68		Mars.
32,27	7 . 28 . 51,71				7,61				45 . 16 . 7,60	+ 32,97	α Cygni R.
	50,85								6,74		α Cygni.
32,92	− 9 . 42 . 55,44		50,0	47,0	9,94				28 . 4 . 2,90	+ 37,65	α Cephei R.
	55,00								3,34		α Cephei.
	46 . 38 . 6,78	29,566	48,7	47,1					83 . 32 . 22,40		☽.
	7,35				1 . 1,32	39 . 9,13		14 . 44,85	22,97		☽.
	7,49								23,11		☽.
33,62	− 39 . 17 . 32,03	29,624	50,9	51,0	47,13				− 1 . 31 . 10,88	+ 31,47	Polaris SP. R.
	30,19								9,04		Polaris SP.
31,75	2 . 7 . 16,75	29,644	51,6	52,0	2,13				39 . 54 . 27,16	− 21,55	η Ursæ Maj. R.
	14,85								25,26		η Ursæ Majoris.

Coincidence of Micrometer Wire with fixed Wire = 10r,140, 10r,145, 10r,149, 10r,162, 10r,165 at the five wires. From Oct. 26 = 10r,136, 10r,135, 10r,141, 10r,149, 10r,155.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 0″,5. From Oct. 26 = + 2″,6.

Adopted Zenith Point = 315°. 3′. 33″,26. From Nov. 3 = 315°. 3′. 32″,70.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Nov. 4	(a) ☉ S.L. M.	22 . 45	3 . 25,0	22,9	23,0	18,0	22,3	23,0	14,601	−1 . 32,97			22 . 46 . 49,68	G.
	☉ N.L.	22 . 10	4 . 37,0	36,9	35,8	29,9	34,9	36,3					22 . 14 . 35,53	G.
	(b) Mars S.L.	28 . 45	4 . 54,0	56,8	52,9	48,6	55,1	53,8					28 . 49 . 53,95	G.
	α Cygni R. M.	127 . 30	3 . 20,4	20,4	18,9	14,0	19,2	18,9	6,175	+1 . 22,67			127 . 34 . 41,59	G.
	α Cygni	322 . 30	2 . 26,0	24,0	24,6	16,9	25,4	22,2					322 . 32 . 23,38	G.
	η Cephei R. M.	144 . 0	3 . 21,7	22,4	20,1	14,6	21,0	20,7	5,430	+1 . 38,20			144 . 4 . 58,57	G.
	η Cephei	306 . 0	2 . 10,8	9,0	9,1	1,8	9,1	6,1					306 . 2 . 7,83	G.
	α Cassiopeiæ R. M.	138 . 30	1 . 21,1	22,0	19,0	16,1	18,8	19,8	8,950	+ 24,82			138 . 31 . 44,40	G.
	α Cassiopeiæ	311 . 35	0 . 24,8	21,8	21,9	16,1	21,4	21,0					311 . 35 . 21,20	G.
	(c) ☽ S.L. M.	357 . 5	2 . 45,9	43,7	45,0	38,0	43,8	43,1	11,560	− 29,68	−2	− 5,93	357 . 7 . 7,87	G.
	☽ S.L. M.	...	...	...	...	...	...	...	11,638	− 31,32	−1	− 2,99	9,17	G.
	☽ S.L. M.	...	...	...	...	...	...	...	11,798	− 34,54			8,94	G.
	η Piscium	352 . 40	2 . 67,3	63,0	67,0	57,1	65,4	63,3					352 . 43 . 4,12	G.
Nov. 6	(d) Polaris R. M.	171 . 15	3 . 8,0	7,3	8,8	2,4	8,0	8,0	8,069	+ 43,19		− 0,04	171 . 18 . 50,50	G.
	Polaris	278 . 45	3 . 21,6	16,0	18,2	11,0	14,6	15,8				+ 0,11	278 . 48 . 16,59	G.
	(e) θ¹ Arietis	348 . 0	4 . 63,1	58,0	61,8	53,7	59,7	58,7					348 . 4 . 59,17	G.
	(f) ☽ S.L. M.	349 . 30	1 . 21,3	17,2	19,8	13,1	15,6	18,1	15,567	−1 . 53,21	−2	− 4,24	349 . 29 . 20,18	G.
	☽ S.L. M.	...	...	...	...	...	...	...	15,701	−1 . 56,02	−1	− 2,17	19,44	G.
	☽ N.L.	348 . 55	4 . 30,2	25,3	29,9	20,2	27,3	26,7					348 . 59 . 26,98	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,226	− 1,61	+1	+ 2,27	27,64	G.
	☽ N.L. M.	...	...	...	...	...	...	...	10,349	− 4,04	+2	+ 4,64	27,58	G.
Nov. 7	α Cephei R. M.	144 . 40	4 . 30,8	28,1	28,8	23,0	26,9	29,8	4,350	+2 . 0,71			144 . 46 . 28,99	G.
	α Cephei	305 . 20	0 . 40,9	35,0	37,8	31,4	35,0	35,4					305 . 20 . 35,97	G.
	(g) Polaris R. M.	171 . 15	3 . 24,5	21,1	24,0	18,2	22,1	22,9	8,663	+ 30,81		− 0,87	171 . 18 . 52,37	G.
	Polaris	278 . 45	3 . 19,8	14,0	15,9	8,9	12,3	13,1				+ 0,70	278 . 48 . 14,98	G.
	ε Arietis	346 . 30	2 . 57,9	51,2	56,6	47,6	51,9	53,0					346 . 32 . 53,28	G.
	δ Arietis	348 . 5	2 . 45,9	39,1	44,9	34,7	39,0	40,2					348 . 7 . 40,87	G.
	α Persei R. M.	132 . 5	3 . 18,3	16,6	17,8	11,0	13,1	14,9	8,335	+ 37,65			132 . 8 . 53,22	G.
	α Persei	317 . 55	3 . 20,0	12,4	17,2	8,8	12,0	13,9					317 . 58 . 14,33	G.
	(h) ☽ N.L. M.	346 . 15	2 . 56,0	49,3	55,2	45,9	49,5	49,4	8,879	+ 26,18	−1	− 1,54	346 . 18 . 15,77	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,941	+ 25,01			16,14	G.
	☽ N.L. M.	..	...	...	...	...	...	...	9,031	+ 23,30	+1	+ 1,64	16,07	G.
	☽ N.L. M.	...	...	...	...	...	...	...	9,100	+ 21,98	+2	+ 3,41	16,52	G.
	η Tauri	343 . 35	3 . 45,3	39,5	44,4	34,0	40,8	40,0					343 . 38 . 40,98	G.
	A¹ Tauri	345 . 35	1 . 45,7	41,4	44,8	37,5	40,8	40,6					345 . 36 . 41,93	G.
Nov. 8	Mars S.L.	28 . 0	4 . 31,4	27,7	29,8	22,4	25,3	29,0					28 . 4 . 27,98	G.
	(e) θ¹ Arietis	348 . 0	4 . 64,0	57,7	64,3	53,0	58,0	58,2					348 . 4 . 59,20	G.
	(e) ψ Arietis	350 . 10	4 . 57,6	54,0	59,9	48,7	53,4	51,6					350 . 14 . 54,20	G
	(e) ω Arietis	352 . 50	4 . 65,3	62,2	67,9	56,0	62,2	59,9					352 . 55 . 2,25	G.
	δ Ceti R. M.	82 . 30	1 . 23,0	20,6	22,3	15,9	18,2	19,2	10,389	− 5,17			82 . 31 . 14,81	G.
	δ Ceti	7 . 35	0 . 51,8	51,8	53,9	44,6	48,8	48,0					7 . 35 . 49,88	G.
	γ Ceti R. M.	85 . 25	0 . 30,9	29,0	30,6	24,1	26,7	27,7	7,205	+1 . 1,21			85 . 26 . 29,41	G.
	γ Ceti	4 . 40	0 . 38,7	36,0	38,4	29,9	33,1	34,0					4 . 40 . 35,07	G.
	η Persei R. M.	138 . 0	4 . 14,5	16,2	16,9	7,7	12,4	12,5	6,918	+1 . 7,18			138 . 5 . 20,91	G.
	η Persei	312 . 0	1 . 48,1	44,6	48,7	38,8	42,4	43,4			+1	+ 0,21	312 . 1 . 44,69	G.
	α Persei R. M.	132 . 5	3 . 23,7	24,8	26,1	16,7	19,8	22,7	8,741	+ 29,18			132 . 8 . 51,78	G.
	α Persei	317 . 55	3 . 19,1	14,6	19,5	8,3	12,4	13,9					317 . 58 . 14,92	G.
	(i) η Tauri	343 . 35	3 . 47,0	44,0	48,1	36,9	44,0	42,1					343 . 38 . 44,00	G.
	(i) A¹ Tauri	345 . 35	1 . 45,5	41,5	46,7	35,6	44,0	41,6					345 . 36 . 42,63	G.
	(k) ☽ N.L. M.	344 . 35	1 . 16,0	12,2	17,5	6,9	14,4	11,3	8,821	+ 27,40	−2	− 1,39	344 . 36 . 39,16	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,842	+ 26,95	−1	− 0,76	39,34	G.
	☽ N.L. M.	...	...	...	...	...	...	...	8,874	+ 26,41			39,56	G.
	(i) τ Tauri	344 . 35	1 . 42,1	38,0	42,6	32,5	40,3	36,9					344 . 36 . 38,87	G.
Nov. 9	☉ N.L. M.	23 . 45	1 . 23,2	19,5	24,0	12,8	20,4	19,8	16,660	−2 . 15,88			23 . 44 . 4,19	G.
	☉ S.L.	24 . 15	1 . 24,4	21,0	24,5	14,9	19,9	20,9					24 . 16 . 21,05	G.
	Mars N.L.	27 . 50	2 . 31,1	28,4	31,0	21,8	26,1	28,4			+2	+ 0,06	27 . 52 . 28,06	G.
	α Persei R. M.	132 . 5	3 . 23,8	21,0	25,4	13,9	17,3	19,8	8,816	+ 27,61			132 . 8 . 48,09	G.
	α Persei	317 . 55	3 . 20,0	12,5	19,2	7,6	10,8	14,1			+1	+ 0,17	317 . 58 . 14,49	G.

Nov. 6, 10ʰ. Molyneux fast on Hardy, 68ˢ,0. Nov. 7, 10ʰ, 68ˢ,5.

(a) Cloudy and misty. (b) Very cloudy. (c) Extremely cloudy and misty. The micrometer readings have been increased by 1ʳ. (d) Excessively faint. Times by Molyneux, 1ʰ. 5ᵐ. 45ˢ and 1ʰ. 6ᵐ. 14ˢ. On taking this observation the middle wire was found broken: the cause unknown. (e) No correction for Runs. (f) Extremely misty, but steady. The S.L. was not full: correction applied for defect of illumination = + 0″,44. (g) Very indefinite: bisection consequently doubtful. Times by Molyneux, 1ʰ. 0ᵐ. 47ˢ and 1ʰ. 1ᵐ. 12ˢ. (h) Hid at 1st wire, and often much clouded. (i) Bisections made by Mr Berry. (k) Good.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
	67 . 43 . 16,98	29,650	52,0	52,5	2 . 19,41	7,98		16 . 9,50	105 . 16 . 27,19		☉.
	67 . 11 . 2,83				2 . 15,82	7,95			28,48		☉.
	73 . 46 . 21,25	29,728	51,0	46,5	3 . 17,87	7,17	10,578	4,56	111 . 36 . 35,67		Mars.
32,48	7 . 28 . 51,11				7,67				45 . 16 . 7,06	+ 32,96	α Cygni R.
	50,68								6,63		α Cygni.
33,20	− 9 . 1 . 25,87				9,27				28 . 45 . 33,14	+ 36,41	η Cephei R.
	24,87								34,14		η Cephei.
32,80	− 3 . 28 . 11,70	29,788	49,0	43,7	3,57				34 . 18 . 53,01	+ 35,84	α Cassiopeiæ. R.
	11,50								53,21		α Cassiopeiæ.
	42 . 3 . 35,17			44,0					79 . 0 . 56,17		☽.
	36,47				53,01	35 . 57,78		14 . 42,51	57,47		☽.
	36,24								57,24		☽.
	37 . 39 . 31,42				45,35				75 . 27 . 25,05	+ 29,34	η Piscium.
33,54	− 36 . 15 . 17,80	29,884	48,0	46,7	43,00				1 . 31 . 7,48	+ 32,42	Polaris R.
	16,11								9,17		Polaris.
	33 . 1 . 26,47	29,876	49,0	46,8	38,10				70 . 49 . 12,85	+ 26,50	θ¹ Arietis.
	34 . 25 . 47,48			47,0	40,15	30 . 20,38			71 . 28 . 32,81		☽.
	46,74								32,07		☽.
	33 . 55 . 54,28							14 . 43,16	28,15		☽.
	54,94				39,41	29 . 56,98			28,81		☽.
	54,88								28,75		☽.
32,48	− 9 . 42 . 56,29	29,694	50,0	48,1	9,95				28 . 4 . 2,04	+ 37,93	α Cephei R.
	56,73								1,60		α Cephei.
33,67	− 36 . 15 . 19,67	29,692	48,2	42,5	43,09				1 . 31 . 5,52	+ 32,72	Polaris R.
	17,72								7,47		Polaris.
	31 . 29 . 20,58	29,676	46,2	40,4	36,14				69 . 17 . 5,00	+ 22,80	ε Arietis.
	33 . 4 . 8,17				38,41				70 . 51 . 54,86	+ 21,56	δ Arietis.
33,77	2 . 54 . 39,48				3,00				40 . 41 . 50,76	+ 18,63	α Persei R.
	41,63								52,91		α Persei.
	31 . 14 . 43,07	29,668	45,3	40,5					68 . 49 . 19,11		☽.
	43,44				35,78	27 . 53,65		14 . 45,63	19,48		☽.
	43,37								19,41		☽.
	43,82								19,86		☽.
	28 . 35 . 8,28				32,13				66 . 22 . 48,69	+ 17,29	η Tauri.
	30 . 33 . 9,23				34,81				68 . 20 . 52,32	+ 15,52	A¹ Tauri.
	73 . 0 . 55,28	29,556	45,0	38,1	3 . 11,05	6,99	10,635	5,15	110 . 51 . 2,47		Mars.
	33 . 1 . 26,50	29,720	40,4	35,0	38,84				70 . 49 . 13,62	+ 26,59	θ¹ Arietis.
	35 . 11 . 21,50				42,13				72 . 59 . 11,91	+ 25,39	ψ Arietis.
	37 . 51 . 29,55				46,43				75 . 39 . 24,26	+ 25,09	ω Arietis.
32,34	52 . 32 . 17,89				1 . 17,86				90 . 20 . 44,03	+ 23,74	δ Ceti R.
	17,18								43,32		δ Ceti.
32,24	49 . 37 . 3,29				1 . 10,17				87 . 25 . 21,74	+ 23,59	γ Ceti R.
	2,37								20,82		γ Ceti.
32,80	− 3 . 1 . 48,21				3,16				34 . 45 . 16,91	+ 23,31	η Persei R.
	48,01								17,11		η Persei.
33,35	2 . 54 . 40,92				3,04				. 41 . 52,24	+ 18,83	α Persei R.
	42,22								53,54		α Persei.
	28 . 35 . 11,30			34,1	32,63				66 . 22 . 52,21	+ 17,34	η Tauri.
	30 . 33 . 9,93				35,34				68 . 20 . 53,55	+ 15,54	A¹ Tauri.
	29 . 33 . 6,46			34,6					67 . 9 . 0,21		☽.
	6,64				33,91	26 . 38,14		14 . 49,70	0,39		☽.
	6,86								0,61		☽.
	29 . 33 . 6,17				33,91				67 . 20 . 48,36	+ 10,80	τ Tauri.
	68 . 40 . 31,49	29,862	39,8	38,0	2 . 31,83	8,05		16 . 10,80	106 . 46 . 14,35		☉.
	69 . 12 . 48,35				2 . 36,00	8,08			13,75		☉.
	72 . 48 . 55,36	29,800	39,7	33,3	3 . 12,25	6,94	9,663	5,13	110 . 39 . 14,08		Mars.
31,29	2 . 54 . 44,61	29,612	37,3	33,0	3,04				40 . 41 . 55,93	+ 19,03	α Persei R.
	41,79								53,11		α Persei.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,136, 10ʳ,135, 10ʳ,141, 10ʳ,149, 10ʳ,155 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = + 2″,6.
Adopted Zenith Point = 315°. 3′. 32″,70.
Assumed Colatitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Nov. 9	σ Persei R. M.	130 . 15	2 . 19,4	15,6	19,8	9,8	12,0	14,0	8,151	+ 41,48			130 . 17 . 56,78	G.
	σ Persei	319 . 45	4 . 14,4	9,4	15,4	4,4	6,2	8,8					319 . 49 . 10,12	G.
Nov. 11	(a) ☉ N.L. M.	24 . 15	4 . 14,9	13,7	17,1	6,4	13,7	12,9	13,613	− 1 . 12,37			24 . 18 . 1,11	G.
	☉ S.L.	24 . 50	0 . 19,7	18,9	19,7	12,2	18,8	16,8					24 . 50 . 17,72	G.
	Mars N.L.	27 . 25	3 . 20,4	18,8	19,3	11,8	17,0	19,4			+2	+ 0,08	27 . 28 . 18,15	G.
	61^1 Cygni R. M.	120 . 45	4 . 15,2	15,5	17,8	9,3	12,9	15,1	6,892	+ 1 . 7,72			120 . 50 . 22,39	G.
	61^1 Cygni	329 . 15	1 . 44,4	41,8	43,1	36,1	40,0	41,1					329 . 16 . 41,23	G.
	ζ Cygni R. M.	112 . 25	1 . 25,0	23,1	25,3	18,4	23,0	23,9	9,026	+ 23,23			112 . 26 . 46,46	G.
	ζ Cygni	337 . 40	0 . 18,1	16,0	18,5	10,8	14,9	16,0					337 . 40 . 15,75	G.
	α Cephei R. M.	144 . 45	0 . 36,0	35,8	37,7	29,1	34,8	34,9	7,609	+ 52,78			144 . 46 . 27,55	G.
	α Cephei	305 . 20	0 . 40,5	35,9	40,2	31,2	35,8	36,7					305 . 20 . 36,77	G.
	ε Pegasi R. M.	92 . 0	0 . 40,3	38,4	40,0	34,4	38,0	38,9	7,505	+ 54,96			92 . 1 . 33,34	G.
	ε Pegasi	358 . 5	0 . 31,6	29,0	32,0	24,9	30,2	30,7					358 . 5 . 29,78	G.
	α Cassiopeiæ R. M.	138 . 30	1 . 23,7	23,1	24,6	18,0	22,9	23,9	9,000	+ 23,77			138 . 31 . 46,59	G.
	α Cassiopeiæ	311 . 35	0 . 22,1	18,2	13,1	22,0	19,1	18,3					311 . 35 . 18,83	G.
	(b) β Ceti R. M.	64 . 0	1 . 32,0	32,5	33,4	25,0	32,7	32,0	5,880	+ 1 . 28,82			64 . 3 . 0,22	G.
	β Ceti	26 . 0	3 . 63,0	63,0	64,9	55,6	61,7	62,1					26 . 4 . 2,07	G.
	(c) Polaris R. M.	171 15	3 . 22,0	21,1	23,6	16,9	22,2	22,9	8,630	+ 31,49		− 1,63	171 . 18 . 51,59	G.
	Polaris	278 . 45	3 . 17,1	14,0	16,9	7,3	12,8	13,7				+ 1,41	278 . 48 . 15,33	G.
	Polaris R. M.	171 . 15	3 . 25,5	25,9	28,0	19,9	26,8	26,9	8,866	+ 26,57		− 0,06	171 . 18 . 52,31	G.
	Polaris	278 . 45	3 . 18,8	14,8	18,2	9,0	14,8	15,5				+ 0,01	278 . 48 . 15,48	G.
Nov. 13	(d) ☉ N.L. M.	24 . 50	2 . 26,7	25,7	25,7	18,2	23,5	26,0	15,153	− 1 . 44,47			24 . 50 . 40,03	G.
	☉ S.L.	25 . 20	2 . 61,1	62,0	61,2	54,7	58,5	60,9					25 . 23 . 0,00	G.
Nov. 15	☽ S.L. M.	4 . 25	3 . 43,6	41,0	44,2	35,2	40,3	42,3	11,399	− 26,32	−2	+ 7,81	4 . 28 . 22,91	G.
	☽ S.L. M.	...	...	...	...	...	...	...	11,213	− 22,47	−1	+ 3,89	22,84	G.
	☽ S.L. M.	...	...	...	...	...	...	...	10,975	− 17,39			24,03	G.
Nov. 16	(e) ☉ S.L. M.	26 . 5	4 . 23,8	24,0	23,3	15,9	21,4	23,8	9,049	+ 22,76			26 . 9 . 45,18	G.
	☉ N.L.	25 . 35	2 . 28,7	28,2	27,5	21,1	27,2	27,5					25 . 37 . 26,90	G.
	Mars S.L.	26 . 20	4 . 55,1	56,9	55,1	49,3	54,5	56,5					26 . 24 . 54,98	G.
	α Equulei R. M.	87 . 25	2 . 23,8	22,8	23,0	17,4	20,0	22,9	7,434	+ 56,43			87 . 28 . 18,28	G.
	α Equulei	2 . 35	3 . 47,5	48,0	50,0	41,9	47,4	48,0					2 . 38 . 47,47	G.
	α Cephei R. M.	144 . 45	0 . 30,6	31,4	30,8	25,9	30,0	31,0	7,399	+ 57,15			144 . 46 . 27,15	G.
	α Cephei	305 . 20	0 . 40,2	36,0	39,7	30,7	35,9	36,7					305 . 20 . 36,58	G.
	α Cassiopeiæ R. M.	138 . 30	1 . 22,7	22,2	23,0	16,1	21,0	23,0	8,988	+ 24,02			138 . 31 . 45,47	G.
	α Cassiopeiæ	311 . 35	0 . 20,2	16,4	19,0	11,3	15,9	16,9					311 . 35 . 16,65	G.
	(f) Polaris R. M.	171 . 15	3 . 15,5	15,6	16,3	10,3	14,4	16,1	8,293	+ 38,52		− 0,36	171 . 18 . 53,14	G.
	Polaris	278 . 45	3 . 14,4	12,2	13,0	4,8	9,6	9,8				+ 0,53	278 . 48 . 11,45	G.
	(g) Polaris SP. R. M.	174 . 20	2 . 19,0	16,9	18,9	12,8	16,4	18,3	14,075	− 1 . 22,12		+ 2,30	174 . 20 . 57,43	G.
	Polaris SP.	275 . 45	1 . 16,0	11,6	14,4	5,6	11,1	11,8				− 2,60	275 . 46 . 9,25	G.
Nov. 18	(h) ☉ S.L.	26 . 35	4 . 21,6	21,4	20,9	14,6	20,9	21,9					26 . 39 . 20,37	G.
	☉ N.L.	26 . 5	1 . 63,0	63,1	62,7	56,2	62,1	61,0					26 . 7 . 1,42	G.
	Mars S.L.	25 . 55	3 . 22,9	22,0	21,5	15,0	21,5	21,8					25 . 58 . 20,90	G.
	μ Persei R. M.	130 . 50	1 . 33,7	33,0	31,6	26,2	30,3	32,0	11,080	− 19,58			130 . 51 . 11,60	G.
	μ Persei	319 . 15	0 . 57,2	53,7	56,9	48,0	53,0	52,8					319 . 15 . 53,63	G.
	γ Tauri R. M.	98 . 5	1 . 14,1	13,1	12,0	7,3	11,1	11,8	10,019	+ 2,54			98 . 6 . 14,14	G.
	γ Tauri	352 . 0	0 . 54,2	52,0	53,7	46,7	52,2	52,6					352 . 0 . 51,93	G.
	δ^1 Tauri R. M.	100 . 0	1 . 40,1	38,2	40,0	33,9	37,8	38,4	9,878	+ 5,48			100 . 1 . 43,60	G.
	δ^1 Tauri	350 . 5	0 . 23,8	20,8	24,0	14,8	21,5	20,3					350 . 5 . 20,88	G.
Nov. 20	☉ S.L. M.	27 . 5	2 . 12,1	11,2	9,6	4,8	8,9	11,3	9,234	+ 18,76	−1	+ 0,12	27 . 7 . 28,60	B.
	☉ N.L.	26 . 35	0 . 12,7	14,1	11,0	7,0	11,2	11,5			+1	− 0,22	26 . 35 . 11,03	B.
	δ Cygni R. M.	127 . 35	0 . 36,6	34,9	34,6	29,1	33,9	35,0	8,130	+ 41,94			127 . 36 . 15,97	B.
	δ Cygni	322 . 30	0 . 49,0	46,4	48,6	40,6	48,0	44,9			$+1\frac{1}{2}$	+ 0,34	322 . 30 . 46,62	B.
	α Cygni R. M.	127 . 30	3 . 25,9	23,8	24,4	17,2	23,8	23,8	6,511	+ 1 . 15,69			127 . 34 . 38,96	B.
	α Cygni	322 . 30	2 . 28,1	24,4	26,9	17,6	25,0	24,9			$+1\frac{3}{4}$	+ 0,45	322 . 32 . 25,02	B.
	Mars S.L.	25 . 30	1 . 9,1	8,9	7,9	2,8	8,2	6,9					25 . 31 . 7,33	B.

Nov. 11, 9^h, Molyneux fast on Hardy, $1^m.11^s,0$. Nov. 16, 9^h—21^h, $1^m.15^s,0$. Nov. 20, 9^h, $1^m.18^s,0$.
Runs taken Nov. 24, $3\frac{1}{2}^h$.
Coincidence at the middle wire taken Nov. 27, 22^h.

(a) Much clouded. (b) Not good. (c) Times by Molyneux, $0^h.59^m.20^s$, $0^h.59^m.43^s$, $1^h.3^m.48^s$ and $1^h.5^m.22^s$. (d) Extremely misty. (e) Unsteady. (f) Times by Molyneux, $1^h.7^m.31^s$ and $1^h.8^m.5^s$. (g) Times by Molyneux, $13^h.11^m.32^s$ and $13^h.11^m.57^s$. (h) Accidentally on the fixed wire.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
33,45	4 . 45 . 35,92				4,98				42 . 32 . 49,18	+ 18,35	σ Persei R.
	37,42								50,68		σ Persei.
	69 . 14 . 29,21	29,984	42,8	43,8	2 . 34,96	8,08		16 . 11,20	107 . 20 . 15,57		☉.
	69 . 46 . 45,82				2 . 39,39	8,11			14,18		☉.
	72 . 24 . 46,25	30,062	42,4	39,0	3 . 7,02	6,85	9,671	5,05	110 . 14 . 59,75		Mars.
31,81	14 . 13 . 9,51	30,068	42,2	38,8	15,20				52 . 0 . 32,99	+ 36,29	61¹ Cygni R.
	9,33								32,81		61¹ Cygni.
31,10	22 . 36 . 45,44				24,99				60 . 24 . 18,71	+ 31,99	ζ Cygni R.
	43,85								17,12		ζ Cygni.
32,16	− 9 . 42 . 55,65				10,27				28 . 4 . 2,36	+ 38,01	α Cephei R.
	55,13								2,88		α Cephei.
31,56	43 . 1 . 58,56	30,078	41,8	37,4	56,14				80 . 50 . 2,98	+ 28,02	ε Pegasi R.
	57,88								2,30		ε Pegasi.
32,71	− 3 . 28 . 14,69	30,100	33,9	34,0	3,68				34 . 18 . 49,91	+ 37,40	α Cassiopeiæ R.
	13,07								51,53		α Cassiopeiæ.
31,14	71 . 0 . 31,68				2 . 54,61				108 . 50 . 34,57	+ 23,95	β Ceti R.
	30,17								33,06		β Ceti.
33,46	− 36 . 15 . 19,69	30,112	38,8	33,4	44,54				1 . 31 . 4,05	+ 34,12	Polaris R.
	16,57								7,17		Polaris.
33,90	− 36 . 15 . 20,41				44,54				1 . 31 . 3,33	+ 34,12	Polaris R.
	16,42								7,32		Polaris.
	69 . 47 . 8,13	30,186	40,4	39,0	2 . 42,14	8,11		16 . 11,60	107 . 53 . 2,04		☉.
	70 . 19 . 28,10				2 . 46,88	8,14			3,52		☉.
	49 . 24 . 51,01	29,908	39,7	37,8					86 . 12 . 49,37		☽.
	50,94				1 . 9,70	44 . 20,57		15 . 59,05	49,30		☽.
	52,13								50,49		☽.
	71 . 6 . 13,28	29,974	42,5	43,5	2 . 51,33	8,19		16 . 12,20	108 . 39 . 52,50		☉.
	70 . 33 . 55,00				2 . 46,31	8,16			53,63		☉.
	71 . 21 . 23,08	29,984	41,6	38,5	2 . 55,67	6,61	10,645	5,25	109 . 11 . 15,17		Mars.
32,87	47 . 35 . 13,62				1 . 5,44				85 . 23 . 27,34	+ 24,39	α Equulei R.
	15,57								29,29		α Equulei.
31,86	− 9 . 42 . 55,25				10,25				28 . 4 . 2,78	+ 38,11	α Cephei R.
	55,32								2,71		α Cephei.
31,06	− 3 . 28 . 13,57		39,6	36,7	3,65				34 . 18 . 51,06	+ 38,45	α Cassiopeiæ R.
	15,25								49,38		α Cassiopeiæ.
32,29	− 36 . 15 . 21,24				44,05				1 . 31 . 2,99	+ 35,72	Polaris R.
	20,45								3,78		Polaris.
33,34	− 39 . 17 . 25,53	29,812	37,6	35,8	48,94				− 1 . 31 . 6,19	+ 35,92	Polaris SP. R.
	22,65								3,31		Polaris SP.
	71 . 35 . 48,47	29,496	46,9	46,8	2 . 52,17	8,21		16 . 12,60	109 . 9 . 28,11		☉.
	71 . 3 . 29,52				2 . 47,02	8,19			29,23		☉.
	70 . 54 . 49,00	29,458	44,8	41,0	2 . 47,50	6,53	10,620	5,00	108 . 44 . 33,25		Mars.
32,61	4 . 12 . 20,30	29,444	40,4	35,7	4,35				41 . 59 . 32,93	+ 13,37	μ Persei R.
	21,73								34,36		μ Persei.
33,03	36 . 57 . 17,76				44,46				74 . 45 . 10,50	+ 14,19	γ Tauri R.
	20,03								12,77		γ Tauri.
32,24	35 . 1 . 48,30				41,43				72 . 49 . 38,01	+ 13,75	δ¹ Tauri R.
	48,98								38,69		δ¹ Tauri.
	72 . 3 . 56,70	29,460	45,5	48,5	2 . 56,06	8,24		16 . 13,00	109 . 37 . 39,80		☉.
	71 . 31 . 39,13				2 . 50,68	8,21			42,88		☉.
31,30	7 . 27 . 15,93	29,592	47,3	45,8	7,61				45 . 14 . 31,82	+ 25,60	δ Cygni R.
	14,72								30,61		δ Cygni.
31,99	7 . 28 . 52,94	29,618	46,0	44,6	7,67				45 . 16 . 8,89	+ 32,13	α Cygni R.
	53,12								9,07		α Cygni.
	70 . 27 . 35,43	29,616	45,6	43,3	2 . 43,46	6,44	10,722	6,04	108 . 17 . 14,69		Mars.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,136, 10ʳ,135, 10ʳ,141, 10ʳ,149, 10ʳ,155 at the five wires. From Nov. 20 = 10ʳ,131, 10ʳ,134, 10ʳ,142, 10ʳ,145, 10ʳ,149.

One Micrometer Revolution = 20″,844.

Correction for Runs = + 2″,6. From. Nov. 18 = + 1″,0.

Adopted Zenith Point = 315°. 3′. 32″,70. From Nov. 11 = 315°. 3′. 31″,90.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Nov. 20	(a) ν Cephei R. M.	143 . 10	4 . 14,8	15,7	15,3	8,1	14,3	15,4	7,759	+ 49,67			143 . 15 . 3,74	B.
	ν Cephei	306 . 50	1 . 62,4	59,8	62,8	54,1	59,9	58,9					306 . 51 . 59,72	B.
	α Cassiopeiæ R. M.	138 . 30	1 . 16,1	15,9	16,2	9,7	14,6	15,7	8,519	+ 33,83			138 . 31 . 48,56	B.
	α Cassiopeiæ	311 . 35	0 . 20,3	17,0	18,9	11,0	17,8	15,9			+1	+ 0,22	311 . 35 . 17,05	B.
	(b) Polaris R. M.	171 . 15	3 . 27,3	27,0	27,8	20,6	26,3	27,6	8,428	+ 35,56		− 6,96	171 . 18 . 54,82	G.
	Polaris	278 . 45	2 . 67,3	64,9	65,9	58,0	63,3	63,7				+ 6,28	278 . 48 . 10,23	G.
	Polaris R. M.	171 . 15	3 . 25,0	25,0	25,6	18,9	24,7	25,1	8,639	+ 31,32		− 0,28	171 . 18 . 55,21	B.
	Polaris	278 . 45	3 . 11,4	10,9	12,1	2,9	9,5	9,5				+ 0,14	278 . 48 . 9,62	B.
	ξ Androm. R. M.	127 . 30	2 . 18,6	18,7	17,7	12,8	16,0	18,5	6,251	+ 1 . 21,11			127 . 33 . 38,24	G.
	(c) ξ Andromedæ M.	322 . 30	2 . 8,0	5,7	7,0	0,0	6,2	5,0	6,251	+ 1 . 21,11	+1	+ 0,15	322 . 33 . 26,64	G.
Nov. 23	(d) ☉ N.L. M.	27 . 15	0 . 12,1	11,9	9,9	6,1	10,0	9,0	11,362	− 25,43			27 . 14 . 44,40	B.
	☉ S.L.	27 . 45	2 . 8,1	9,0	8,0	2,7	7,2	6,4					27 . 47 . 6,97	B.
	(e) 4 Arietis	351 . 0	4 . 57,1	52,9	57,3	48,1	53,9	53,9					351 . 4 . 53,87	B.
	9 Persei R. M.	137 . 55	2 . 17,1	17,5	16,9	10,5	15,1	17,1	6,516	+ 1 . 15,59			137 . 58 . 31,37	B.
	9 Persei	312 . 5	3 . 37,0	34,0	36,4	28,0	33,7	35,7					312 . 8 . 34,25	B.
	(e) ψ Arietis	350 . 10	4 . 56,6	52,0	57,0	47,9	54,0	52,0					350 . 14 . 53,25	B.
	(e) μ Arietis	347 . 50	4 . 62,6	58,1	62,0	52,9	60,0	58,9					347 . 54 . 59,08	B.
	(f) α Persei R. M.	132 . 5	3 . 16,1	15,0	15,6	9,1	12,4	14,1	8,263	+ 39,17			132 . 8 . 52,99	B.
	α Persei	317 . 55	3 . 12,1	8,0	12,3	2,9	8,5	9,5			1½	+ 0,39	317 . 58 . 9,52	B.
	μ Persei R. M.	130 . 50	0 . 23,6	22,1	22,0	16,7	19,9	22,9	7,709	+ 50,72			130 . 51 . 11,94	B.
	μ Persei	319 . 15	0 . 55,0	51,1	54,6	45,1	50,0	51,1			+1	+ 0,17	319 . 15 . 51,35	B.
	(g) α Camelop. R. M.	148 . 50	3 . 28,1	25,6	27,3	21,0	25,0	27,4	6,867	+ 1 . 8,05	−1½	− 0,76	148 . 54 . 33,17	B.
	α Camelopardali	301 . 10	2 . 41,1	35,8	40,2	28,9	34,3	35,9					301 . 12 . 36,12	B.
	ε Aurigæ R. M.	126 . 25	0 . 32,4	31,5	31,3	25,8	29,3	31,3	8,815	+ 27,66			126 . 25 . 57,94	G.
	ε Aurigæ	323 . 40	0 . 70,7	64,2	69,2	59,1	64,0	64,9					323 . 41 . 5,38	G.
	η Aurigæ R. M.	123 . 50	1 . 29,8	27,9	27,4	22,3	23,1	26,5	8,880	+ 26,30			123 . 51 . 52,52	G.
	η Aurigæ	326 . 15	0 . 14,9	10,2	15,0	5,9	10,3	10,7					326 . 15 . 11,17	G.
Nov. 24	ω Piscium R. M.	88 . 45	4 . 14,0	10,1	12,9	4,5	8,4	12,8	2,269	+ 2 . 44,11			88 . 51 . 54,69	B.
	ω Piscium	1 . 15	0 . 14,8	12,0	16,0	7,8	13,9	12,9			+3	+ 0,14	1 . 15 . 13,04	B.
Nov. 26	(h) Polaris SP. R. M.	174 . 20	2 . 43,1	39,7	41,8	35,0	40,3	42,0	15,208	− 1 . 45,76		+ 1,42	174 . 20 . 55,94	G.
	Polaris SP.	275 . 45	1 . 15,0	16,0	13,9	5,4	9,7	11,0				− 1,75	275 . 46 . 10,07	G.
Nov. 27	☉ N.L. M.	28 . 0	3 . 22,6	22,8	21,9	15,7	22,3	22,1	13,665	− 1 . 13,43			28 . 2 . 7,75	G.
	☉ S.L.	28 . 30	4 . 32,8	32,0	32,7	24,8	32,0	31,7					28 . 34 . 30,93	G.
	ν Aquarii	19 . 10	4 . 20,6	20,8	19,5	11,6	19,3	18,8					19 . 14 . 18,38	G.
	α Cephei R. M.	144 . 40	4 . 20,4	19,1	19,8	12,2	19,1	20,9	3,960	+ 2 . 8,85			144 . 46 . 27,38	G.
	α Cephei	305 . 20	0 . 38,9	35,8	35,8	29,2	35,8	34,4					305 . 20 . 34,98	G.
	(i) ☽ S.L. M.	18 . 5	2 . 50,6	50,3	49,8	42,5	49,1	48,3	12,308	− 45,37	−2	− 6,80	18 . 6 . 56,23	G.
	☽ S.L. M.	...	...	...	...	...	...	...	12,478	− 48,84	−1	− 3,37	56,19	G.
	☽ S.L. M.	...	...	...	...	...	...	...	12,701	− 53,33			55,07	G.
	☽ S.L. M.	...	...	...	...	...	...	...	12,810	− 55,54	+1	+ 3,31	56,17	G.
	☽ S.L. M.	...	...	...	...	...	...	...	12,967	− 58,74	+2	+ 6,56	56,22	G.
	(k) α Cassiopeiæ R. M.	138 . 30	1 . 21,0	19,9	18,2	13,0	17,0	18,2	8,668	+ 30,72			138 . 31 . 48,59	G.
	α Cassiopeiæ	311 . 35	0 . 18,4	16,1	15,6	9,0	14,0	14,5					311 . 35 . 14,60	G.
Nov. 28	☉ S.L. M.	28 . 45	0 . 51,1	51,9	49,2	44,5	49,9	50,0	11,671	− 31,87			28 . 45 . 17,55	B.
	☉ N.L.	28 . 10	2 . 60,4	60,7	58,8	52,7	58,5	59,0			+1	− 0,19	28 . 12 . 58,13	B.
	α Lyræ R. M.	121 . 25	3 . 22,2	20,9	18,0	14,9	17,4	19,7	6,410	+ 1 . 17,79			121 . 29 . 36,59	B.
	α Lyræ	328 . 35	2 . 29,9	27,1	27,9	20,0	29,9	26,8			+1¼	+ 0,19	328 . 37 . 27,09	B.
	Mars S.L.	23 . 35	0 . 35,7	35,2	34,8	28,8	34,7	33,0					23 . 35 . 33,70	B.
	30 Aquarii	14 . 30	0 . 64,7	64,8	63,0	57,2	62,8	60,5					14 . 31 . 2,15	B.
	θ Aquarii	15 . 45	2 . 62,8	60,4	62,0	54,6	60,6	59,0					15 . 47 . 59,87	B.
	☽ S.L. M.	13 . 10	1 . 60,9	62,3	60,3	52,0	59,0	56,7	12,090	− 40,83	−2	− 6,90	13 . 11 . 10,77	B.
	☽ S.L. M.	...	...	...	...	...	...	...	12,480	− 48,74			9,76	B.
	☽ S.L. M.	...	...	...	...	...	...	...	12,902	− 57,38	+2	+ 6,78	7,90	B.
	η Aquarii	8 . 10	0 . 8,1	7,0	8,8	1,9	8,0	5,9					8 . 10 . 6,62	B.
	Polaris SP. R. M.	174 . 20	2 . 29,9	25,0	27,8	20,2	24,9	27,1	14,580	− 1 . 32,52			174 . 20 . 53,26	B.
	Polaris SP.	275 . 45	1 . 16,1	11,3	14,3	4,5	10,8	11,9					275 . 46 . 11,47	B.

Runs taken Dec. 7, 5^h.
Nov. 26, 21^h. Molyneux fast on Hardy, $1^m.25^s,0$.

(a) This is σ Cephei in A.S.C. (b) Times by Molyneux, $0^h.53^m.30^s$, $0^h.54^m.3^s$, $1^h.2^m.40^s$ and $1^h.3^m.20^s$. (c) By mistake on micrometer wire. (d) Cloudy: rain falling. (e) No correction for Runs. (f) Mercury disturbed. (g) Not used for determining the adopted Zenith Point: the mercury was much disturbed. (h) Divisions barely visible on account of moisture. Times by Molyneux, $13^h.10^m.12^s$ and $13^h.10^m.46^s$. (i) Dark clouds passing rapidly: doubtful observation. The micrometer readings have been increased by 1^r. (k) Very cloudy.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	″	′ ″	r	′ ″	° ′ ″	″	
31,73	− 8 . 11 . 31,84				8,43				29 . 35 . 28,01	+ 39,80	ν Cephei R.
	32,18								27,67		ν Cephei.
32,80	− 3 . 28 . 16,66	29,644	44,5	41,7	3,57				34 . 18 . 48,05	+ 39,17	α Cassiopeiæ R.
	14,85								49,86		α Cassiopeiæ.
32,53	− 36 . 15 . 22,92	29,642	44,7	41,3	43,13				1 . 31 . 2,23	+ 37,02	Polaris R.
	21,67								3,48		Polaris.
32,41	− 36 . 15 . 23,31				43,13				1 . 31 . 1,84		Polaris R.
	22,28								2,87		Polaris.
32,44	7 . 29 . 53,66				7,75				45 . 17 . 9,69	+ 35,09	ξ Androm. R.
	54,74								10,77		ξ Andromedæ.
	72 . 11 . 12,50	29,258	51,2	52,8	2 . 54,54	8,25		16 . 13,60	110 . 17 . 20,67		☉.
	72 . 43 . 35,07				3 . 0,21	8,28			21,68		☉.
	36 . 1 . 21,97	29,488	45,2	38,5	42,79				73 . 49 . 13,04	+ 28,87	4 Arietis.
32,81	− 2 . 54 . 59,47				3,00				34 . 52 . 5,81	+ 30,46	9 Persei R.
	57,65								7,63		9 Persei.
	35 . 11 . 21,35				41,49				72 . 59 . 11,12	+ 25,67	ψ Arietis.
	32 . 51 . 27,18				38,01				70 . 39 . 13,47	+ 24,94	μ Arietis.
31,25	2 . 54 . 38,91				2,99				40 . 41 . 50,18	+ 21,83	α Persei R.
	37,62								48,89		α Persei.
31,64	4 . 12 . 19,96	29,516	42,0	35,5	4,36				41 . 59 . 32,68	+ 14,27	μ Persei R.
	19,45								32,09		μ Persei.
34,64	− 13 . 51 . 1,27			34,5	14,65				23 . 55 . 52,36	+ 7,19	α Camelop. R.
	50 . 55,78								57,85		α Camelopard.
31,66	8 . 37 . 33,96				9,02				46 . 24 . 51,26	+ 6,88	ε Aurigæ R.
	33,48								50,78		ε Aurigæ.
31,84	11 . 11 . 39,38				11,76				48 . 58 . 59,42	+ 6,35	η Aurigæ R.
	39,27								59,31		η Aurigæ.
33,86	46 . 11 . 37,21	29,566	40,9	35,2	1 . 1,89				83 . 59 . 47,38	+ 30,13	ω Piscium R.
	41,14								51,31		ω Piscium.
33,00	− 39 . 17 . 24,04	29,574	48,9	50,2	47,13				− 1 . 31 . 2,89	+ 38,87	Polaris SP. R.
	21,83								0,68		Polaris SP.
	72 . 58 . 35,85	29,584	54,8	54,8	3 . 4,25	8,29		16 . 14,20	111 . 4 . 54,29		☉.
	73 . 30 . 59,03				3 . 10,47	8,32			55,26		☉.
	64 . 10 . 46,48	29,662	52,2	51,2	1 . 58,47				101 . 59 . 53,23	+ 17,74	ν Aquarii.
31,18	− 9 . 42 . 55,48				9,86				28 . 4 . 2,94	+ 37,73	α Cephei R.
	56,92								1,50		α Cephei.
	63 . 3 . 24,33	29,628	51,9	51,1					99 . 47 . 9,84		☽
	24,29								9,80		☽.
	23,17				1 . 52,91	49 . 56,57		15 . 19,14	8,68		☽.
	24,27								9,78		☽.
	24,32								9,83		☽.
31,59	− 3 . 28 . 16,69				3,50				34 . 18 . 48,09	+ 40,36	α Cassiopeiæ R.
	17,30								47,48		α Cassiopeiæ.
	73 . 41 . 45,65	30,086	51,1	52,3	3 . 16,90	8,33		16 . 14,40	111 . 15 . 48,10		☉.
	73 . 9 . 26,23				3 . 10,42	8,30			51,03		☉.
31,84	13 . 33 . 55,31	30,106	52,5	52,0	14,11				51 . 21 . 17,70	+ 13,58	α Lyræ R.
	55,19								17,58		α Lyræ.
	68 . 32 . 1,80	30,102	49,7	46,5	2 . 29,19	6,09	10,660	5,40	106 . 21 . 27,78		Mars.
	59 . 27 . 30,25				1 . 39,86				97 . 16 . 18,39	+ 22,43	30 Aquarii.
	60 . 44 . 27,97				1 . 45,12				98 . 33 . 21,37	+ 22,61	θ Aquarii.
	58 . 7 . 38,87	30,100	49,0	47,0					94 . 54 . 20,58		☽.
	37,86				1 . 34,68	46 . 54,62		15 . 6,63	19,57		☽.
	36,00								17,71		☽.
	53 . 6 . 34,72				1 . 18,51				90 . 55 . 1,51	+ 26,08	η Aquarii.
32,36	− 39 . 17 . 21,36	30,206	48,3	45,3	48,62				− 1 . 31 . 1,70	+ 39,47	Polaris SP. R.
	20,43								0,77		Polaris SP.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,131, 10ʳ,134, 10ʳ,142, 10ʳ,145, 10ʳ,149 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = + 1″,0. From Nov. 26 = − 0″,4.
Adopted Zenith Point = 315°. 3′. 31″,90.
Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Nov. 28	(a) Arcturus R. M....	102 . 50	0 . 40,5	37,7	37,1	31,8	35,6	35,6	8,780	+ 28,38			102 . 51 . 4,76	B.
	Arcturus.........	347 . 15	0 . 62,9	57,9	60,8	52,3	59,1	57,8			$+1\frac{1}{4}$	+ 0,09	347 . 15 . 58,52	B.
Nov. 29	⊙ N.L. M.	28 . 25	1 . 16,9	16,1	15,0	9,9	13,0	13,8	18,270	− 2 . 49,42			28 . 23 . 24,68	B.
	⊙ S.L.	28 . 55	0 . 45,9	44,5	43,4	37,7	42,5	43,1					28 . 55 . 42,83	B.
	(b) α Lyræ R. M.....	121 . 25	3 . 15,0	12,9	11,3	7,6	11,2	11,0	6,073	+ 1 . 24,82			121 . 29 . 36,27	B.
	α Lyræ...........	328 . 35	2 . 30,2	25,9	25,1	19,1	30,0	25,7					328 . 37 . 25,97	B.
	Mars N.L........	23 . 20	0 . 20,1	17,1	16,6	9,7	16,6	15,2					23 . 20 . 15,88	B.
	(c) α Aquarii R. M...	81 . 45	0 . 32,3	29,4	29,7	24,0	28,0	28,2	3,961	+ 2 . 8,83			81 . 47 . 37,43	B.
	α Aquarii.	8 . 15	4 . 28,9	27,7	27,1	20,8	27,1	26,9			$+2\frac{1}{4}$	− 0,01	8 . 19 . 26,34	B.
	η Aquarii.........	8 . 10	0 . 7,9	7,1	7,9	1,2	7,2	6,1					8 . 10 . 6,23	B.
	x^2 Piscium........	7 . 50	3 . 61,1	58,2	59,1	53,0	58,9	57,9					7 . 53 . 57,98	B.
	☽ S.L. M.........	8 . 10	1 . 29,1	27,0	26,8	21,1	28,0	28,0	12,885	− 57,40	−2	− 6,79	8 . 10 . 22,46	B.
	☽ S.L. M.........	...	...	...	...	...	...	...	13,209	− 1 . 3,93			22,72	B.
	☽ S.L. M.........	...	...	...	...	...	...	...	13,630	− 1 . 12,56	+2	+ 6,77	20,86	B.
	ι Piscium	2 . 25	3 . 20,0	15,9	18,4	10,1	17,1	16,9					2 . 28 . 16,35	B.
	α Cassiopeiæ R. M.	138 . 30	1 . 16,6	13,2	13,8	6,5	13,0	11,9	8,401	+ 36,28			138 . 31 . 48,76	B.
	α Cassiopeiæ......	311 . 35	0 . 20,9	15,9	16,8	9,0	14,9	13,9					311 . 35 . 15,23	B.
	ε Piscium R. M...	89 . 50	3 . 19,9	16,0	17,1	9,4	15,6	16,0	5,829	+ 1 . 29,90			89 . 54 . 45,52	B.
	ε Piscium.	0 . 10	2 . 21,1	19,0	20,0	11,0	19,1	17,0			+1	+ 0,03	0 . 12 . 17,86	B.
	η Piscium.........	352 . 40	2 . 67,1	61,7	67,1	56,5	63,3	62,4					352 . 43 . 2,98	B.
	105 Piscium......	351 . 35	3 . 46,9	41,2	47,0	36,0	43,1	42,9					351 . 38 . 42,82	B.
	ι Arietis..........	350 . 10	2 . 21,0	15,8	20,9	10,2	17,0	16,9					350 . 12 . 16,93	B.
	10 Arietis.........	342 . 0	4 . 53,3	48,0	52,0	40,9	47,8	48,9					342 . 4 . 48,42	B.
	α Ceti R. M.......	86 . 15	3 . 21,0	17,9	17,1	11,1	14,9	16,9	4,120	+ 2 . 5,52			86 . 20 . 21,95	B.
	α Ceti.	3 . 45	1 . 47,0	43,9	44,9	37,2	44,2	43,2					3 . 46 . 43,38	B.
Dec. 1	☽ S.L. M..........	358 . 35	0 . 14,2	9,7	13,4	5,9	9,0	9,8	11,940	− 37,69	−2	− 6,09	358 . 34 . 26,55	B.
	☽ S.L. M..........	...	...	...	...	...	...	...	12,260	− 44,13			26,20	B.
	☽ S.L. M..........	...	...	...	...	...	...	...	12,572	− 50,49	+2	+ 6,27	26,11	B.
	(d) ε Piscium M......	0 . 10	3 . 12,1	7,1	11,9	2,5	7,3	7,8	12,572	− 50,64			0 . 12 . 17,44	B.
	η Piscium R. M...	97 . 20	2 . 19,3	14,9	18,1	10,8	13,1	15,8	5,116	+ 1 . 44,79			97 . 24 . 0,09	B.
	η Piscium.........	352 . 40	2 . 67,1	61,9	68,0	56,2	62,1	63,0					352 . 43 . 3,02	B.
	(e) α Arietis R. M....	105 . 30	3 . 24,7	18,9	23,4	16,0	17,6	20,3	5,914	+ 1 . 28,16			105 . 34 . 48,26	B.
	α Arietis.........	344 . 30	2 . 23,4	16,1	21,9	12,4	17,6	19,2			$+1\frac{1}{2}$	+ 0,14	344 . 32 . 18,54	B.
	(f) Arcturus R. M....	102 . 50	0 . 33,1	29,0	31,0	24,1	27,1	28,9	8,490	+ 34,45			102 . 51 . 3,32	B.
	Arcturus M......	347 . 15	0 . 26,2	21,1	26,0	16,1	22,2	23,1	8,490	+ 34,45	$+1\frac{1}{2}$	+ 0,12	347 . 15 . 57,02	B.
	α Cor. Bor. R. M..	110 . 5	0 . 37,1	34,1	35,0	29,0	31,5	33,8	9,767	+ 7,84			110 . 5 . 41,26	B.
	α Coronæ Borealis.	340 . 0	1 . 24,3	18,9	23,9	14,2	21,0	21,1					340 . 1 . 20,55	B.
Dec. 2	(g) ⊙ S.L. M.........	29 . 25	0 . 27,7	25,4	26,8	18,9	24,6	26,9	12,273	− 44,40			29 . 24 . 40,65	G.
	⊙ N.L.	28 . 50	2 . 21,6	19,3	20,9	12,5	17,3	19,1					28 . 52 . 18,42	G.
Dec. 4	(h) α Cygni R. M.....	127 . 30	3 . 26,9	24,0	27,2	19,9	23,6	25,0	6,706	+ 1 . 11,65			127 . 34 . 36,03	G.
	α Cygni..........	322 . 30	2 . 27,2	24,0	25,9	18,9	25,1	24,9					322 . 32 . 24,30	G.
Dec. 5	(e) ☽ S.L. M.	345 . 30	4 . 47,9	45,9	49,1	40,2	49,2	46,4	12,119	− 41,04	+2	+ 2,42	345 . 34 . 7,76	G.
	υ^1 Tauri..........	344 . 45	3 . 30,9	27,0	29,9	21,8	30,1	27,9					344 . 48 . 27,88	G.
	τ Tauri...........	344 . 35	1 . 39,0	36,1	39,9	31,9	39,9	36,9					344 . 36 . 37,27	G.
	ε Aurigæ R. M....	126 . 25	0 . 14,1	13,9	14,0	8,1	12,8	14,0	7,858	+ 47,63			126 . 26 . 0,45	G.
	ε Aurigæ.........	323 . 40	0 . 65,0	61,5	64,9	56,8	62,1	60,4					323 . 41 . 1,77	G.
	Capella R. M.....	128 . 40	0 . 16,2	16,4	16,0	11,0	15,1	15,3	8,881	+ 26,30			128 . 40 . 41,30	G.
	Capella...........	321 . 25	1 . 22,0	19,8	20,1	13,6	19,6	20,1					321 . 26 . 19,18	G.
	(i) 31 Camelop. R. M.	142 . 40	1 . 19,8	19,9	18,2	13,8	18,9	19,1	10,802	− 13,74			142 . 41 . 4,53	G.
	31 Camelopardali..	307 . 25	0 . 58,0	55,1	58,2	50,8	56,0	55,0			$+1\frac{1}{4}$	+ 0,41	307 . 25 . 55,91	G.
	α Lyncis R. M....	144 . 20	3 . 14,2	15,9	14,1	9,1	14,2	15,0	8,569	+ 32,80			144 . 23 . 46,50	G.
	α Lyncis	305 . 40	3 . 19,4	16,3	17,1	10,1	16,1	16,6			$+1\frac{1}{2}$	+ 0,63	305 . 43 . 16,51	G.
Dec. 6	α Cygni R. M.....	127 . 30	3 . 36,0	33,9	33,9	27,2	32,0	32,3	7,032	+ 1 . 4,84			127 . 34 . 37,34	G.
	α Cygni.	322 . 30	2 . 28,5	24,8	24,9	19,1	25,0	24,8					322 . 32 . 24,48	B.
	(a) α Cassiopeiæ R. M.	138 . 30	1 . 24,6	25,0	23,0	17,4	21,9	22,8	8,941	+ 25,05			138 . 31 . 47,48	B.
	α Cassiopeiæ......	311 . 35	0 . 18,1	15,1	16,1	8,3	13,6	12,9					311 . 35 . 14,02	B.

Coincidences at the five wires taken Dec. 5, 3^h.
Dec. 6, 8^h. Molyneux fast on Hardy, $1^m . 38^s,0$.

(a) Mercury disturbed. (b) Too much wind. (c) Very unsteady. (d) Taken by mistake on the micrometer-wire as left in the preceding observation. (e) Very cloudy. (f) Much hurried. (g) Good: very clearly defined. (h) Faint from clouds. (i) Very faint.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
31,64	32 . 12 . 27,14	30,234	47,8	46,3	37,40				70 . 0 . 12,82	– 23,07	Arcturus R.
	26,62								12,30		Arcturus.
	73 . 19 . 52,78	30,232	49,0	48,4	3 . 14,97	8,31		16 . 14,50	111 . 26 . 22,22		☉.
	52 . 10,93				3 . 21,6	8,34			18,04		☉.
31,12	13 . 33 . 55,63	30,234	50,0	49,0	14,25				51 . 21 . 18,16	+ 13,32	α Lyræ R.
	54,07								16,60		α Lyræ.
	68 . 16 . 43,98	30,258	47,9	46,0	2 . 28,21	6,05	9,639	5,24	106 . 6 . 19,66		Mars.
31,88	53 . 15 . 54,47	30,260	47,8	45,6	1 . 19,60				91 . 4 . 22,35	+ 24,73	α Aquarii R.
	54,44								22,32		α Aquarii.
	53 . 6 . 34,33				1 . 19,15				90 . 55 . 1,76	+ 26,02	η Aquarii.
	52 . 50 . 26,08	30,278	47,0	44,8	1 . 18,56				90 . 38 . 52,92	+ 26,93	x^2 Piscium.
	53 . 6 . 50,56	30,282	46,9	44,6					89 . 56 . 40,76		☽.
	50,82				1 . 19,39	43 . 40,76		14 . 56,71	41,02		☽.
	48,96								39,16		☽.
	47 . 24 . 44,45				1 . 4,86				85 . 12 . 57,59	+ 29,01	ι Piscium.
31,99	– 3 . 28 . 16,86	30,294	46,3	44,4	3,63				34 . 18 . 47,79	+ 40,60	α Cassiopeiæ R.
	16,67								47,98		α Cassiopeiæ.
31,69	45 . 8 . 46,38	30,302	46,2	43,9	1 . 0,06				82 . 56 . 54,72	+ 28,90	ε Piscium R.
	45,96								54,30		ε Piscium.
	37 . 39 . 31,08				46,14				75 . 27 . 25,50	+ 29,52	η Piscium.
	36 . 35 . 10,92				44,38				74 . 23 . 3,58	+ 29,28	105 Piscium.
	35 . 8 . 45,03				42,09				72 . 56 . 35,40	+ 28,41	ι Arietis.
	27 . 1 . 16,52				30,50				64 . 48 . 55,30	+ 29,48	10 Arietis.
32,66	48 . 43 . 9,95	30,368	45,9	41,9	1 . 8,47				86 . 31 . 26,70	+ 20,71	α Ceti R.
	11,48								28,23		α Ceti.
	43 . 30 . 55,86	30,038	43,6	41,1					80 . 27 . 9,93		☽.
	55,51				56,58	37 . 5,44		14 . 45,35	9,58		☽.
	55,42								9,49		☽.
	45 . 8 . 46,75				59,89				82 . 56 . 54,92	+ 28,80	ε Piscium.
31,55	37 . 39 . 30,60	30,040	42,9	40,8	46,03				75 . 27 . 24,91	+ 29,49	η Piscium R.
	32,33								26,64		η Piscium.
33,40	29 . 28 . 42,43				33,73				67 . 16 . 24,44	+ 28,78	α Arietis R.
	47,85								29,86		α Arietis.
30,17	32 . 12 . 27,37	30,130	42,2	36,6	38,03				70 . 0 . 13,68	– 23,85	Arcturus R.
	26,33								12,64		Arcturus.
30,90	24 . 57 . 49,43	30,148	42,5	40,1	27,92				62 . 45 . 25,63	– 14,90	α Cor. Bor. R.
	49,86								26,06		α Coronæ Bor.
	74 . 21 . 9,96	30,138	43,8	42,1	3 . 30,16	8,36		16 . 15,00	111 . 55 . 25,04		☉.
	73 . 48 . 47,73				3 . 22,98	8,34			25,65		☉.
30,16	7 . 28 . 54,66	30,256	49,0	47,6	7,79				45 . 16 . 10,73	+ 30,38	α Cygni R.
	53,61								9,68		α Cygni.
	30 . 30 . 37,07	30,080	49,4	49,8	34,56	27 . 27,29		14 . 50,71	67 . 36 . 1,91		☽.
	29 . 44 . 57,19				33,52				67 . 32 . 38,99	+ 13,34	υ^1 Tauri.
	29 . 33 . 6,58				33,26				67 . 20 . 48,12	+ 11,18	τ Tauri.
31,11	8 . 37 . 30,24	30,100	48,7	47,1	8,95				46 . 24 . 47,47	+ 8,46	ε Aurigæ R.
	31,08								48,31		ε Aurigæ.
30,24	6 . 22 . 49,39				6,60				44 . 10 . 4,27	+ 5,84	Capella R.
	48,49								3,37		Capella.
32,22	– 7 . 37 . 33,84	30,106	47,0	45,6	7,93				30 . 9 . 26,51	– 1,13	31 Camelop. R.
	34,78								25,57		31 Camelopard.
31,50	– 9 . 20 . 15,81				9,74				28 . 26 . 42,73	– 5,41	α Lyncis R.
	14,18								44,36		α Lyncis.
30,91	7 . 28 . 53,35	30,276	48,8	47,4	7,79				45 . 16 . 9,42	+ 30,08	α Cygni R.
	53,79								9,86		α Cygni.
30,75	– 3 . 28 . 16,79	30,308	46,8	45,1	3,62				34 . 18 . 47,87	+ 41,44	α Cassiopeiæ R.
	16,67								47,99		α Cassiopeiæ.

Coincidence of Micrometer Wire with fixed wire = 10ʳ,131, 10ʳ,134, 10ʳ,142, 10ʳ,145, 10ʳ,149 at the five wires. From Dec. 1 = 10ʳ.132, 10ʳ,135, 10ʳ,143, 10ʳ,146, 10ʳ,150.

One Micrometer Revolution = 20″,844.

Correction for Runs = – 0″,4.

Adopted Zenith Point. = 315°. 3′. 31″,90. From Dec. 1 = 315°. 3′. 30″,69.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Dec. 6	(a) γ Cassiopeiæ R. M.	142 . 40	2 . 21,4	20,2	19,1	14,1	19,9	21,4	8,041	+ 43,81			142 . 43 . 3,13	B.
	γ Cassiopeiæ......	307 . 20	3 . 57,8	55,9	56,1	48,1	54,0	53,7					307 . 23 . 54,22	B.
	(b) Polaris R. M......	171 . 15	3 . 24,9	24,3	24,7	18,2	22,9	25,0	8,463	+ 35,02		− 1,16	171 . 18 . 57,14	B.
	Polaris............	278 . 45	2 . 69,5	66,1	67,0	59,6	63,4	63,9				+ 1,36	278 . 48 . 6,24	B.
	101 Piscium......	353 . 20	3 . 41,3	37,8	41,8	31,0	38,1	37,8					353 . 23 . 37,92	B.
	4 Arietis.........	351 . 0	4 . 55,1	52,1	55,5	45,4	53,0	51,3					351 . 4 . 52,00	B.
	ι Arietis..........	350 . 10	2 . 20,2	16,9	19,9	10,8	17,9	15,5					350 . 12 . 16,83	B.
	υ¹ Tauri..........	344 . 45	3 . 32,9	27,6	31,0	22,8	29,3	28,4					344 . 48 . 28,62	B.
	τ Tauri..........	344 . 35	1 . 41,1	36,4	40,5	31,7	39,9	36,8					344 . 36 . 37,72	B.
	(c) ☽ N.L. M.........	344 . 5	1 . 62,4	58,2	62,4	52,1	62,0	58,0	8,915	+ 25,37	−2	− 0,22	344 . 7 . 24,30	B.
	☽ N.L. M.........	...	...	...	...	...	...	...	8,940	+ 24,90	−1	− 0,17	23,88	B.
	☽ N.L. M.........	...	...	...	...	...	...	...	8,949	+ 24,88			24,03	B.
	☽ N.L. M.........	...	...	...	...	...	...	...	8,968	+ 24,55	+1	+ 0,31	24,01	B.
	☽ N.L. M.........	...	...	...	...	...	...	...	8,990	+ 24,17	+2	+ 0,74	24,06	B.
	(d) Capella R. M.	128 . 40	0 . 23,7	20,9	20,8	16,1	19,8	20,0	8,811	+ 27,78	+½	− 0,04	128 . 40 . 47,96	B.
	Capella...........	321 . 25	1 . 24,5	20,0	21,6	13,8	18,8	20,0			+2	+ 0,62	321 . 26 . 20,39	B.
Dec. 7	(e) Polaris R. M.....	171 . 15	2 . 28,7	26,0	28,0	20,9	26,6	26,0	5,655	+ 1 . 33,56		− 0,17	171 . 18 . 59,37	B.
	Polaris............	278 . 45	2 . 66,8	62,7	64,0	57,3	61,6	61,0				+ 1,29	278 . 48 . 3,49	B.
	(f) 51 Androm. R. M.	130 . 40	0 . 26,0	24,0	23,0	17,9	22,9	23,1	7,990	+ 44,87			130 . 41 . 7,69	B.
	51 Andromedæ...	319 . 25	0 . 56,3	52,0	54,7	47,0	52,8	50,8			+1	+ 0,17	319 . 25 . 52,42	B.
	(g) α Arietis R. M....	105 . 30	3 . 26,0	21,1	22,2	18,3	20,8	21,2	6,198	+ 1 . 22,29	+1	− 0,06	105 . 34 . 43,78	B.
	α Arietis.........	344 . 30	2 . 21,2	17,0	20,1	12,9	21,1	17,0			+3	+ 0,57	344 . 32 . 18,75	B.
Dec. 8	⊙ N.L...........	29 . 35	3 . 50,2	50,4	49,6	43,4	48,2	49,9					29 . 38 . 48,57	B.
	α Lyræ R. M.	121 . 25	3 . 28,9	27,0	25,0	22,8	25,2	28,1	6,942	+ 1 . 6,72			121 . 29 . 32,84	B.
	α Lyræ...........	328 . 35	2 . 31,1	27,8	29,1	21,6	29,1	27,1			+1½	+ 0,27	328 . 37 . 27,87	B.
	Mars S.L.........	20 . 55	3 . 52,9	51,9	50,1	45,7	52,0	51,2					20 . 58 . 50,58	B.
	(h) ζ Aquarii R. M...	82 . 0	1 . 22,0	19,9	19,1	13,9	18,0	18,5	5,010	+ 1 . 46,99			82 . 3 . 5,54	B.
	ζ Aquarii.........	8 . 0	3 . 56,5	55,2	55,9	49,0	55,0	54,4			+2½	− 0,01	8 . 3 . 54,27	B.
	α Pegasi R. M....	97 . 10	4 . 17,8	15,9	16,6	10,8	14,9	16,1	11,830	− 35,17			97 . 13 . 40,13	B.
	α Pegasi.........	352 . 50	3 . 23,9	19,1	23,0	14,1	21,0	21,9			+1¾	+ 0,11	352 . 53 . 20,56	B.
	(i) Polaris R. M......	171 . 15	3 . 12,0	10,0	12,3	4,1	8,9	11,2	7,470	+ 55,79		− 5,74	171 . 18 . 59,75	B.
	Polaris............	278 . 45	2 . 64,9	59,5	61,7	53,6	57,9	59,1				+ 4,63	278 . 48 . 4,05	B.
	Polaris R. M......	171 . 15	3 . 20,1	18,9	20,1	12,1	16,7	19,1	8,170	+ 41,12		− 0,01	171 . 18 . 58,89	B.
	Polaris...........	278 . 45	2 . 69,2	66,4	67,9	59,9	64,2	65,2				+ 0,13	278 . 48 . 5,56	B.
	η Piscium.........	352 . 40	2 . 66,0	62,9	66,9	56,0	62,3	62,8					352 . 43 . 2,78	B.
	103 Piscium......	351 . 25	0 . 37,0	32,1	35,9	27,7	34,1	33,9					351 . 25 . 33,45	B.
	1 Arietis.........	345 . 45	0 . 43,9	39,2	43,7	34,3	42,8	41,2					345 . 45 . 40,85	B.
	ι Arietis..........	350 . 10	2 . 21,1	16,5	21,2	10,7	17,5	18,2					350 . 12 . 17,50	B.
	(k) 10 Arietis.........	342 . 0	4 . 53,0	48,0	52,0	42,2	48,5	49,1					342 . 4 . 48,78	B.
	α Ceti R. M......	86 . 20	0 . 38,0	36,0	35,9	30,2	34,9	36,3	10,871	− 15,18			86 . 20 . 20,04	B.
	α Ceti.............	3 . 45	1 . 45,9	43,2	45,1	36,3	42,3	44,1			+3	+ 0,08	3 . 46 . 42,88	B.
	α Persei R. M. ...	132 . 5	3 . 22,0	20,2	21,8	14,0	17,9	20,7	8,440	+ 35,49			132 . 8 . 54,87	B.
	α Persei..........	317 . 55	3 . 11,9	5,0	11,0	0,0	5,2	6,9					317 . 58 . 6,63	B.
	d Pleiadum.......	343 . 45	3 . 21,1	14,1	20,1	9,0	16,9	16,9					343 . 48 . 16,30	B.
	(l) Aldebaran R. M...	99 . 0	0 . 26,0	23,1	23,8	17,9	21,1	21,8	3,027	+ 2 . 28,33			99 . 2 . 50,60	B.
	Aldebaran	351 . 0	4 . 14,0	8,9	15,0	3,9	9,9	11,0			+1	+ 0,04	351 . 4 . 10,44	B.
	ι Aurigæ R. M....	115 . 45	0 . 27,4	26,0	24,0	19,1	22,8	23,0	8,976	+ 24,32			115 . 45 . 48,04	B.
	ι Aurigæ	334 . 20	1 . 16,6	11,6	15,0	6,1	12,9	13,2					334 . 21 . 12,55	B.
	μ Geminorum. ...	344 . 40	0 . 39,2	33,9	37,2	29,9	36,1	35,6					344 . 40 . 35,32	B.
	γ Geminorum	350 . 40	3 . 70,1	64,2	70,5	59,2	65,0	65,8					355 . 44 . 5,75	B.
	(m) ☽ S.L. M..........	346 . 25	0 . 42,1	37,5	41,2	32,9	38,1	37,8	10,820	− 14,12			346 . 25 . 24,15	B.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,738	− 12,34	+1	− 1,51	24,42	B.
	☽ S.L. M..........	...	...	...	...	...	...	...	10,841	− 14,41	+2	− 2,89	20,97	B.
	δ Geminorum R.M.	105 . 5	1 . 21,7	18,1	19,0	13,2	17,0	17,0	8,139	+ 41,77			105 . 6 . 59,42	B.
	(n) δ Geminorum.....	344 . 55	4 . 68,7	63,0	67,1	58,9	64,1	63,9					345 . 0 . 4,28	B.
Dec. 11	⊙ S.L.	30 . 25	3 . 29,2	26,0	28,0	20,8	25,1	27,9					30 . 28 . 26,10	B.
	η Aurigæ R. M...	123 . 50	1 . 36,1	33,9	34,1	29,3	31,1	33,7	9,125	+ 21,20			123 . 51 . 54,20	B.
	η Aurigæ.........	326 . 15	0 . 10,4	6,4	10,5	2,9	6,0	7,1					326 . 15 . 7,22	B.

Dec. 7, 8ʰ. Molyneux fast on Hardy, 1ᵐ. 39ˢ,0. Dec. 8, 8ʰ, 1ᵐ. 41ˢ,0.
Runs and Coincidences at the middle wire taken Dec. 15, 22ʰ.

(a) Mercury unsteady: this observation is not used in determining the adopted Zenith Point. (b) Times by Molyneux, 1ʰ. 9ᵐ. 47ˢ and 1ʰ. 10ᵐ. 10ˢ. (c) The S.L. was eclipsed. The micrometer readings have been diminished by 1ʳ. (d) Cloudy and indistinct. Not used for adopted Zenith Point. (e) Clouds passing. Times by Molyneux, 1ʰ. 6ᵐ. 54ˢ and 1ʰ. 10ᵐ. 3ˢ. (f) Very cloudy. (g) Cloudy, and too much wind. (h) Indefinite. (i) Times by Molyneux, 0ʰ. 54. 42ˢ, 0ʰ. 55ᵐ. 46ˢ, 1ʰ. 5ᵐ. 24ˢ and 1ʰ. 6ᵐ. 39ˢ. (k) Observed as single. (l) Mercury unsteady. (m) Very much hurried: appears a bad observation. (n) No correction for Runs.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N. P. D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
28,68	− 7 . 39 . 32,44				8,02				30 . 7 . 27,82	+ 41,25	γ Cassiopeiæ R.
	36,47								23,79		γ Cassiopeiæ.
31,69	− 36 . 15 . 26,45	30,314	46,3	43,7	43,89				1 . 30 . 57,94	+ 41,42	Polaris R.
	24,45								59,94		Polaris.
	38 . 20 . 7,23				47,31				76 . 8 . 2,82	+ 28,96	101 Piscium.
	36 . 1 . 21,31				43,51				73 . 49 . 13,10	+ 28,78	4 Arietis.
	35 . 8 . 46,14				42,13				72 . 56 . 36,55	+ 28,57	ι Arietis.
	29 . 44 . 57,93				34,21				67 . 32 . 40,42	+ 13,34	υ¹ Tauri.
	29 . 33 . 7,03				33,94				67 . 20 . 49,25	+ 11,18	τ Tauri.
	29 . 3 . 53,61	30,290	44,0	40,9					66 . 40 . 6,19		☽.
	53,19								5,77		☽.
	53,34				33,43	26 . 25,19		14 . 56,06	5,92		☽.
	53,32								5,90		☽.
	53,37								5,95		☽.
34,18	6 . 22 . 42,73				6,73				44 . 9 . 57,74	+ 5,98	Capella R.
	49,70								10 . 4,71		Capella.
31,43	− 36 . 15 . 28,68	29,992	51,6	51,8	42,71				1 . 30 . 56,89	+ 41,62	Polaris R.
	27,20								58,37		Polaris.
30,05	4 . 22 . 23,00				4,46				42 . 9 . 35,74	+ 36,55	51 Androm. R.
	21,73								34,47		51 Androm.
31,27	29 . 28 . 46,91	29,998	51,3	52,0	32,92				67 . 16 . 28,11	+ 28,96	α Arietis R.
	48,06								29,26		α Arietis.
	74 . 35 . 17,88	30,140	50,0	50,1	3 . 29,88	8,38		16 . 15,90	112 . 42 . 3,56		☉.
30,35	13 . 33 . 57,85	30,138	50,1	51,0	14,15				51 . 21 . 20,28	+ 10,96	α Lyræ R.
	57,18								19,61		α Lyræ.
	65 . 55 . 19,89	30,142	48,0	45,7	2 . 11,90	5,68	10,675	5,54	103 . 44 . 28,85		Mars.
29,90	53 . 0 . 25,15			44,5	1 . 18,73				90 . 48 . 52,16	+ 25,22	ζ Aquarii R.
	23,58								50,59		ζ Aquarii.
30,34	37 . 49 . 50,56		47,8	45,0	46,07				75 . 37 . 44,91	+ 31,66	α Pegasi R.
	49,87								44,22		α Pegasi.
31,90	− 36 . 15 . 29,06	30,168	41,9	45,9	43,48				1 . 30 . 55,74	+ 41,92	Polaris R.
	26,64								58,16		Polaris.
32,23	− 36 . 15 . 28,20								1 . 30 . 56,60		Polaris R.
	25,13								59,67		Polaris.
	37 . 39 . 32,09				45,75				75 . 27 . 26,12	+ 29,34	η Piscium.
	36 . 22 . 2,76				43,65				74 . 9 . 54,69	+ 29,21	103 Piscium.
	30 . 42 . 10,16				35,21				68 . 29 . 53,65	+ 29,98	1 Arietis.
	35 . 8 . 46,81				41,74				72 . 56 . 36,83	+ 28,34	ι Arietis.
	27 . 1 . 18,09				30,24				64 . 48 . 56,61	+ 29,79	10 Arietis.
31,46	48 . 43 . 10,65	30,176	44,7	40,0	1 . 8,31				86 . 31 . 27,94	+ 19,99	α Ceti R.
	12,19								28,78		α Ceti.
30,75	2 . 54 . 35,82				3,05				40 . 41 . 47,15	+ 24,49	α Persei R.
	35,94								47,27		α Persei.
	28 . 44 . 45,61				32,93				66 . 32 . 26,82	+ 18,67	*d* Pleiadum.
30,52	36 . 0 . 40,09				43,63				73 . 48 . 32,00	+ 11,61	Aldebaran R.
	39,75								31,66		Aldebaran.
30,29	19 . 17 . 42,65				21,02				57 . 5 . 11,95	+ 9,43	ι Aurigæ R.
	41,86								11,16		ι Aurigæ.
	29 . 37 . 4,63				34,13				67 . 24 . 47,04	− 3,27	μ Geminorum.
	35 . 40 . 35,06				43,10				73 . 28 . 26,44	− 4,61	γ Geminorum.
	31 . 21 . 53,46	30,202	44,2	42,6					68 . 25 . 43,29		☽.
	53,73				36,43	28 . 45,21		15 . 9,67	43,56		☽.
	50,28								40,11		☽.
31,85	− 29 . 56 . 31,27				34,43				67 . 44 . 13,98	− 11,17	δ Geminorum R.
	33,59								16,30		δ Geminorum.
	75 . 24 . 55,41	30,244	45,9	45,3	3 . 45,00	8,41		16 . 16,20	112 . 59 . 24,08		☉.
30,71	11 . 11 . 36,49	30,290	42,7	38,0	11,98				48 . 58 . 56,75	+ 8,43	η Aurigæ R.
	36,53								56,79		η Aurigæ.

Coincidence of Micrometer Wire with fixed Wire = 10ʳ,132, 10ʳ,135, 10ʳ,143, 10ʳ,146, 10ʳ,150 at the five wires. From Dec. 11 = 10ʳ,131, 10ʳ,134, 10ʳ,142, 10ʳ,145, 10ʳ,149.

One Micrometer Revolution = 20″,844.

Correction for Runs = − 0″,4. From Dec. 11 = − 0″,6.

Adopted Zenith Point = 315°. 3′. 30″,69.

Assumed Co-latitude = 37°. 47′. 8″,28.

Month and Day.	NAME OF STAR or PLANET.	Pointer.	Microscopes. A	B	C	D	E	F	Microm. Reading.	Correction to Fixed Wire.	Interval of Obs. from Middle Wire.	Correction to Middle Wire.	Concluded reading of Circle.	Observer.
		° ′	′ ″	″	″	″	″	″	r.	′ ″		″	° ′ ″	
Dec. 11	(a) β Tauri R. M.....	111 . 15	3 . 30,6	27,0	29,0	20,9	23,1	27,5	7,756	+ 49,74			111 . 19 . 16,02	B.
	β Tauri..........	338 . 45	2 . 48,2	43,8	50,1	39,2	44,0	45,3					338 . 47 . 45,02	B.
Dec. 12	(b) ☉ S.L. M.........	30 . 30	4 . 23,0	18,5	21,0	13,4	17,9	22,0	13,281	−1 . 5,43			30 . 33 . 13,79	B.
	☉ N.L...........	30 . 0	0 . 54,2	50,9	52,0	46,1	49,2	51,3					30 . 0 . 50,60	B.
	α Cygni R. M.....	127 . 30	3 . 26,6	23,9	24,9	18,9	21,6	24,3	6,730	+1 . 11,12			127 . 34 . 34,42	B.
	α Cygni..........	322 . 30	2 . 28,9	24,5	28,3	19,9	25,8	25,0					322 . 32 . 25,35	B.
	α Cephei R. M....	144 . 45	0 . 28,0	25,1	26,2	20,0	24,1	25,0	7,209	+1 . 1,14			144 . 46 . 25,87	B.
	α Cephei.........	305 . 20	0 . 42,5	37,5	41,9	32,9	36,9	37,9					305 . 20 . 38,25	B.
Dec. 14	☉ S.L. M.........	30 . 40	2 . 25,2	24,0	23,9	18,2	22,0	23,9	12,300	− 44,98			30 . 41 . 37,84	B.
	☉ N.L.	30 . 5	4 . 16,4	15,9	15,8	10,1	12,0	16,1					30 . 9 . 14,30	B.
	Polaris R. M.....	171 . 15	3 . 26,9	24,8	26,0	19,2	24,9	26,0	8,464	+ 34,98		+ 0,00	171 . 18 . 59,55	B.
	(c) Polaris............	278 . 45	2 . 66,0	63,0	65,1	56,9	61,9	62,2				+ 0,02	278 . 48 . 2,47	B.
	(d) ψ Persei R. M....	130 . 30	0 . 30,2	28,9	28,0	23,0	27,9	29,0	8,626	+ 31,60			130 . 30 . 59,42	B.
	ψ Persei.........	319 . 35	0 . 64,9	61,2	65,6	55,1	62,0	60,8					319 . 36 . 1,58	B.
	e Leonis	9 . 20	3 . 42,8	41,4	42,0	35,3	42,0	41,4					9 . 23 . 40,75	B.
	β Virginis........	4 . 35	1 . 42,9	42,8	42,0	35,7	42,0	40,9					4 . 36 . 41,02	B.
	(e) ψ Virginis........	15 . 55	0 . 64,0	62,1	62,9	56,1	61,9	60,9					15 . 56 . 1,30	B.
	(f) Polaris SP. R. M..	174 . 20	2 . 27,1	24,1	25,5	20,1	25,1	26,5	14,740	−1 . 35,85		+ 0,01	174 . 20 . 48,84	B.
	Polaris............	275 . 45	1 . 18,0	15,0	15,9	8,1	12,3	13,9				− 0,01	275 . 46 . 13,84	B.
Dec. 15	☉ N.L. M.	30 . 10	4 . 20,3	18,1	16,1	12,2	16,1	19,0	14,609	−1 . 33,12			30 . 12 . 43,76	B.
	☉ S.L.	30 . 40	5 . 10,3	8,4	10,0	4,0	7,8	10,1					30 . 45 . 8,33	B.
	(e) α Arietis R. M. ...	105 . 30	3 . 22,9	19,0	19,2	14,9	17,8	18,9	6,072	+1 . 24,84			105 . 34 . 43,56	B.
	α Arietis.........	344 . 30	2 . 20,3	17,9	20,0	12,8	20,6	18,0			+1	+ 0,06	344 . 32 . 18,28	B.
	(e) θ Persei R. M.....	131 . 20	4 . 31,1	31,0	30,9	24,5	28,0	30,1	9,168	+ 20,30			131 . 24 . 49,48	B.
	θ Persei..........	318 . 40	2 . 17,2	12,6	14,8	7,0	11,9	12,3			+1	+ 0,17	318 . 42 . 12,75	B.
	α Persei R. M.....	132 . 5	3 . 31,1	29,1	31,0	24,1	28,0	29,7	8,878	+ 26,34			132 . 8 . 55,11	B.
	α Persei..........	317 . 55	2 . 69,5	64,9	67,9	59,0	64,9	65,0					317 . 58 . 5,13	B.
	μ Persei R. M.....	130 . 50	0 . 32,1	29,8	29,5	24,2	29,1	29,3	7,940	+ 45,90			130 . 51 . 14,90	B.
	μ Persei..........	319 . 15	0 . 51,0	46,9	48,5	40,0	47,8	46,4					319 . 15 . 46,75	B.
	α Camelop. R. M..	148 . 50	3 . 30,3	29,1	30,2	22,0	29,1	29,9	6,940	+1 . 6,74			148 . 54 . 35,09	B.
	(g) α Camelopardali...	301 . 10	2 . 30,9	26,1	29,1	19,9	26,1	25,2					301 . 12 . 26,17	B.
Dec. 22	(h) ☉ S.L. M.........	30 . 55	2 . 41,9	39,9	41,0	32,2	38,0	39,9	13,600	− 1 . 12,08			30 . 56 . 26,69	B.
	☉ N.L...........	30 . 20	3 . 64,1	62,1	63,1	55,5	60,9	63,6					30 . 24 . 1,47	B.
Dec. 23	(i) β Aurigæ R. M...	127 . 45	0 . 32,8	29,1	27,5	24,0	28,7	29,2	8,119	+ 42,17			127 . 46 . 10,72	B.
	β Aurigæ.	322 . 20	0 . 52,0	45,9	48,0	42,9	47,9	47,1			+2	+ 0,60	322 . 20 . 47,88	B.

Dec. 14, 7^h—19^h, Molyneux fast on Hardy, $49^s,0$.

(a) Indefinite. (b) The micrometer reading has been increased by 1^r. (c) Times by Molyneux, $1^h.3^m.56^s$ and $1^h.4^m.47^s$. (d) Strong wind: faint from clouds. (e) Very faint. (f) Times by Molyneux, $13^h.3^m.42^s$ and $13^h.4^m.35^s$. (g) Cloudy. (h) Clouds passing. (i) Cloudy and very indefinite.

Sec. of apparent Zenith Point.	Apparent Zenith Distance.	Barom.	Thermometer. Attach.	Thermometer. Free.	Refraction.	Parallax.	Micrometer for opposite Limb.	Semi-diameter.	Geoc. N.P.D. of Center.	Corr. to Mean N.P.D. Jan. 1, 1843.	NAME OF STAR or PLANET.
″	° ′ ″	Inch.	°	°	′ ″	′ ″	r	′ ″	° ′ ″	″	
30,52	23 . 44 . 14,67				26,62				61 . 31 . 49,57	+ 4,93	β Tauri R.
	14,33								49,23		β Tauri.
	75 . 29 . 43,10	30,374	38,0	35,2	3 . 52,15	8,42		16 . 16,30	113 . 4 . 18,81		☉.
	74 . 57 . 19,91				3 . 43,72	8,40			19,81		☉.
29,89	7 . 28 . 56,27	30,378	41,8	37,0	7,99				45 . 16 . 12,54	+ 28,93	α Cygni R.
	54,66								10,93		α Cygni.
32,06	− 9 . 42 . 55,18				10,42				28 . 4 . 2,68	+ 36,03	α Cephei R.
	52,44								5,42		α Cephei.
	75 . 38 . 7,15	30,412	45,8	47,0	3 . 48,93	8,42		16 . 16,50	113 . 12 . 39,44		☉.
	5 . 43,61				3 . 40,54	8,40			40,53		☉.
31,01	− 36 . 15 . 28,86	30,364	45,2	43,9	43,94				1 . 30 . 55,48	+ 43,12	Polaris R.
	28,22								56,12		Polaris.
30,50	4 . 32 . 31,27	30,324	44,3	43,1	4,76				42 . 19 . 44,31	+ 23,65	ψ Persei R.
	30,89								43,93		ψ Persei.
	54 . 20 . 10,06	30,260	45,4	46,1	1 . 22,69				92 . 8 . 41,03	− 23,88	e Leonis.
	49 . 33 . 10,33				1 . 9,65				87 . 21 . 28,26	− 25,73	β Virginis.
	60 . 52 . 30,61	30,274	45,0	43,4	1 . 46,99				98 . 41 . 25,88	− 21,04	ψ Virginis.
31,34	− 39 . 17 . 18,15	30,280	44,8	44,4	48,82				− 1 . 30 . 58,69	+ 43,22	Polaris SP. R.
	16,85								57,39		Polaris.
	75 . 9 . 13,07	30,276	47,2	49,0	3 . 39,51	8,41		16 . 16,60	113 . 16 . 9,05		☉.
	41 . 37,64				3 . 47,89	8,43			8,78		☉.
30,92	29 . 28 . 47,13	30,260	48,1	47,7	33,50				67 . 16 . 28,91	+ 28,96	α Arietis R.
	47,59								29,37		α Arietis.
31,11	3 . 38 . 41,21				3,78				41 . 25 . 53,27	+ 30,92	θ Persei R.
	42,06								54,12		θ Persei.
30,12	2 . 54 . 35,58	30,248	48,0	47,5	3,01				40 . 41 . 46,87	+ 25,61	α Persei R.
	34,44								45,73		α Persei.
30,82	4 . 12 . 15,79				4,36				41 . 59 . 28,43	+ 17,96	μ Persei R.
	16,06								28,70		μ Persei.
30,63	− 13 . 51 . 4,40	30,258	47,9		14,62				23 . 55 . 49,26	+ 12,77	α Camelop. R.
	4,52								49,14		α Camelopard.
	75 . 52 . 56,00	30,316	45,2	44,6	3 . 53,40	8,44		16 . 17,00	113 . 27 . 32,24		☉.
	20 . 30,78				3 . 44,73	8,42			32,37		☉.
29,30	7 . 17 . 19,97	30,344	50,9	45,5	7,64				45 . 4 . 35,89	+ 0,87	β Aurigæ R.
	17,19								33,11		β Aurigæ.

Coincidence of Micrometer Wire with fixed Wire = 10r,131, 10r,134, 10r,142, 10r,145, 10r,149 at the five wires.
One Micrometer Revolution = 20″,844.
Correction for Runs = − 0″,6.
Adopted Zenith Point = 315°. 3′. 30″,69.
Assumed Co-latitude = 37°. 47′. 8″,28.

MEAN NORTH POLAR DISTANCES OF STARS

OBSERVED IN THE YEAR 1843,

AS DEDUCED FROM EACH DAY's OBSERVATION,

WITHOUT CORRECTIONS FOR THE DISCORDANCE OF ZENITH POINTS,
AND FOR THE ALTERATION OF CO-LATITUDE:

WITH

A CATALOGUE

OF THE

CONCLUDED MEAN NORTH POLAR DISTANCES,

JANUARY 1, 1843,

CORRECTED FOR THE DISCORDANCE OF ZENITH POINTS,
AND FOR THE ALTERATION OF CO-LATITUDE.

α Andromedæ.

	° ′ ″
Oct. 14	61 . 46 . 33,61
21	34,69

α Andromedæ R.

Oct. 14	61 . 46 . 33,36
21	35,62

β Cassiopeiæ SP.

Mar. 17	31 . 43 . 0,01

β Cassiopeiæ SP. R.

Mar. 17	31 . 42 . 56,13

γ Pegasi.

Oct. 14	75 . 41 . 22,00
21	21,89

γ Pegasi R.

Oct. 14	75 . 41 . 21,89
21	22,52

***d* Piscium.**

Sept. 9	82 . 40 . 55,92

α Cassiopeiæ.

Apr. 10	34 . 19 . 29,22
Nov. 4	29,05
11	28,93
16	27,83
20	29,03
27	27,84
29	28,58
Dec. 6	29,43

α Cassiopeiæ R.

Apr. 10	34 . 19 . 26,88
Nov. 4	28,85
11	27,31
16	29,51
20	27,22
27	28,45
29	28,39
Dec. 6	29,31

β Ceti.

Nov. 11	108 . 50 . 57,01

β Ceti R.

	° ′ ″
Nov. 11	108 . 50 . 58,52

γ Cassiopeiæ.

Dec. 6	30 . 8 . 5,04

γ Cassiopeiæ R.

Dec. 6	30 . 8 . 9,07

ε Piscium.

Nov. 29	82 . 57 . 23,20
Dec. 1	23,72

ε Piscium R.

Nov. 29	82 . 57 . 23,62

Polaris.

Mar. 7	1 . 31 . 40,52
23	41,06
Oct. 5	41,28
19	40,59
21	40,06
Nov. 6	41,59
7	40,19
11	41,29
11	41,44
16	39,50
20	40,50
20	39,89
Dec. 6	41,36
7	39,99
8	40,08
8	41,59
14	39,24

Polaris R.

Mar. 7	1 . 31 . 37,88
23	38,02
Oct. 5	40,03
19	38,73
21	40,79
Nov. 6	39,90
7	38,24
11	38,17
11	37,45
16	38,71
20	39,25
20	38,86
Dec. 6	39,36
7	38,51
8	37,66
8	38,52
14	38,60

Polaris SP.

	° ′ ″
Apr. 17	1 . 31 . 40,36
24	39,95
May 3	38,98
Aug. 1	40,32
18	39,92
Sept. 6	39,32
8	39,47
9	39,52
13	39,59
16	38,79
Oct. 2	38,17
19	39,43
26	40,30
Nov. 3	40,51
16	39,23
26	39,55
28	40,24
Dec. 14	40,61

Polaris SP. R.

Apr. 17	1 . 31 . 41,25
24	39,92
May 3	43,39
Aug. 1	41,64
18	42,57
Sept. 6	42,12
8	41,11
9	43,13
13	41,45
16	41,84
Oct. 2	40,73
19	41,53
26	40,43
Nov. 3	42,35
16	42,11
26	41,76
28	41,17
Dec. 14	41,91

ξ Andromedæ.

Nov. 20	45 . 17 . 45,86

ξ Andromedæ R.

Nov. 20	45 . 17 . 44,78

η Piscium.

Jan. 30	75 . 27 . 54,43
Nov. 4	54,39
29	55,02
Dec. 1	56,13
8	55,46

η Piscium R.

	° ′ ″
Dec. 1	75 . 27 . 54,40

101 Piscium.

Dec. 6	76 . 8 . 31,78

51 Andromedæ.

Jan. 7	42 . 10 . 9,27
Dec. 7	11,02

51 Andromedæ R.

Jan. 7	42 . 10 . 11,08
Dec. 7	12,29

103 Piscium.

Dec. 8	74 . 10 . 23,90

105 Piscium.

Jan. 30	74 . 23 . 33,23
Nov. 29	32,86

Σ 162.

Jan. 30	42 . 53 . 15,42

4 Arietis.

Nov. 23	73 . 49 . 41,91
Dec. 6	41,88

1 Arietis.

Dec. 8	68 . 30 . 23,63

γ Arietis. *s.*

Jan. 30	71 . 28 . 40,38

γ Arietis. *n.*

Jan. 30	71 . 28 . 31,31

β Arietis.

July 19	69 . 57 . 42,12

B.A.C. 586.

Jan. 30	88 . 55 . 49,44

ι Arietis.	° ′ ″
Nov. 29	72 . 57 . 3,81
Dec. 6	4,92
8	5,17

γ Andromedæ.	
June 22	48 . 25 . 36,12

γ Andromedæ R.	
June 22	48 . 25 . 36,35

10 Arietis.	
Nov. 29	64 . 49 . 24,78
Dec. 8	26,40

α Arietis.	
June 22	67 . 16 . 56,65
Dec. 1	58,64
7	58,22
15	58,33

α Arietis R.	
June 22	67 . 16 . 58,55
Dec. 1	(53,22)
7	57,07
15	57,87

Σ 221.	
Jan. 30	70 . 23 . 53,43

θ¹ Arietis.	
Jan. 30	70 . 49 . 39,33
Nov. 6	39,35
8	40,21

9 Persei.	
Nov. 23	34 . 52 . 38,09

9 Persei R.	
Nov. 23	34 . 52 . 36,27

ψ Arietis.	
Jan. 30	72 . 59 . 36,15
Nov. 8	37,30
23	36,79

ω Arietis.	° ′ ″
Jan. 30	75 . 39 . 50,29
Nov. 8	49,35

δ Ceti.	
Nov. 8	90 . 21 . 7,06

δ Ceti R.	
Nov. 8	90 . 21 . 7,77

* Æ. 2h.31m.27s.	
Jan. 30	73 . 57 . 1,86

θ Persei.	
Dec. 15	41 . 26 . 25,04

θ Persei R.	
Dec. 15	41 . 26 . 24,19

μ Arietis.	
Nov. 23	70 . 39 . 38,41

γ Ceti.	
Nov. 8	87 . 25 . 44,41

γ Ceti R.	
Nov. 8	87 . 25 . 45,33

μ Ceti.	
Feb. 13	80 . 33 . 10,27

η Persei.	
Nov. 8	34 . 45 . 40,42

η Persei R.	
Nov. 8	34 . 45 . 40,22

ε Arietis.	
Nov. 7	69 . 17 . 27,80

α Ceti.	° ′ ″
Nov. 29	86 . 31 . 48,94
Dec. 8	48,77

α Ceti R.	
Nov. 29	86 . 31 . 47,41
Dec. 8	47,23

δ Arietis.	
Nov. 7	70 . 52 . 16,42

α Persei.	
Jan. 16	40 . 42 . 12,10
30	10,29
Feb. 13	10,53
June 22	11,69
Nov. 7	11,54
8	12,37
9	12,14
23	10,72
Dec. 8	11,76
15	11,34

α Persei R.	
Jan. 16	40 . 42 . 10,70
30	11,63
Feb. 13	12,12
June 22	12,32
Nov. 7	9,39
8	11,07
9	14,96
23	12,01
Dec. 8	11,64
15	12,48

σ Persei.	
Jan. 16	42 . 33 . 9,02
Nov. 9	9,03

σ Persei R.	
Jan. 16	42 . 33 . 8,02
Nov. 9	7,53

ψ Persei.	
Dec. 14	42 . 20 . 7,58

ψ Persei R.	° ′ ″
Dec. 14	42 . 20 . 7,96

δ Persei.	
Jan. 31	42 . 43 . 13,42

δ Persei R.	
Jan. 31	42 . 43 . 13,53

d Pleiadum.	
Feb. 13	66 . 32 . 43,83
Dec. 8	45,49

η Tauri.	
Jan. 16	66 . 23 . 6,27
Nov. 7	5,98
8	(9,55)

η Tauri R.	
Jan. 16	66 . 23 . 6,71

λ Tauri.	
Jan. 16	77 . 57 . 29,95

λ Tauri R.	
Jan. 16	77 . 57 . 29,98

A¹ Tauri.	
Aug. 18	68 . 21 . 8,61
Nov. 7	7,84
8	9,09

μ Persei.	
Nov. 18	41 . 59 . 47,73
23	46,36
Dec. 15	46,66

μ Persei R.	
Nov. 18	41 . 59 . 46,30
23	46,87
Dec. 15	46,39

Σ 520.	° ′ ″
Jan. 30	67 . 34 . 59,13
31	58,82
Feb. 13	60,30

γ Tauri.	
Nov. 18	74 . 45 . 26,96

γ Tauri R.	
Nov. 18	74 . 45 . 24,69

δ^1 Tauri.	
Nov. 18	72 . 49 . 52,44

δ^1 Tauri R.	
Nov. 18	72 . 49 . 51,76

υ^1 Tauri.	
Dec. 5	67 . 32 . 52,33
6	53,76

Σ 559.	
Jan. 31	72 . 19 . 11,49
Mar. 3	12,03

Aldebaran.	
June 14	73 . 48 . 40,53
Aug. 18	42,63
Dec. 8	43,27

Aldebaran R.	
June 14	73 . 48 . 45,09
Aug. 18	42,40
Dec. 8	43,61

τ Tauri.	
Nov. 8	67 . 20 . 59,16
Dec. 5	59,30
6	60,43

α Camelopardali.	
Nov. 23	23 . 56 . (5,04)
Dec. 15	1,91

α Camelopardali R.	° ′ ″
Nov. 23	23 . 55 . (59,55)
Dec. 15	62,03

ι Aurigæ.	
Dec. 8	57 . 5 . 20,59

ι Aurigæ R.	
Dec. 8	57 . 5 . 21,38

k Tauri.	
Feb. 1	65 . 11 . 51,37
Mar. 3	52,08

ε Aurigæ.	
Jan. 26	46 . 24 . 56,93
Nov. 23	57,66
Dec. 5	56,77

ε Aurigæ R.	
Jan. 26	46 . 24 . 58,95
Nov. 23	58,14
Dec. 5	55,93

η Aurigæ.	
Nov. 23	48 . 59 . 5,66
Dec. 11	5,22

η Aurigæ R.	
Nov. 23	48 . 59 . 5,77
Dec. 11	5,18

β Eridani.	
Mar. 3	95 . 17 . 40,26
4	41,15
8	40,34

β Eridani R.	
Mar. 3	95 . 17 . 38,94
4	40,00
8	39,95

Σ 652.	
Feb. 17	89 . 9 . 35,42

ρ Orionis.	° ′ ″
Feb. 17	87 . 19 . 52,44
Mar. 3	51,65
4	52,70

Capella.	
Jan. 10	44 . 10 . 7,81
12	10,35
Feb. 1	7,91
10	7,84
Mar. 8	7,97
May 1	7,96
2	7,98
11	9,17
20	8,85
June 14	8,66
15	9,61
20	8,43
July 6	8,53
11	8,12
16	7,77
19	10,45
Dec. 5	9,21
6	10,69

Capella R.	
Jan. 10	44 . 10 . 9,06
12	8,46
Feb. 1	8,80
10	9,93
Mar. 8	8,98
May 1	11,41
2	9,82
11	8,90
20	9,26
June 14	11,31
15	10,47
20	9,33
July 6	9,46
11	9,20
16	9,78
19	8,75
Dec. 5	10,11
6	(3,72)

Σ 694.	
Jan. 4	65 . 11 . 35,02

β Tauri.	
May 2	61 . 31 . 51,85
June 14	53,44
Dec. 11	54,16

β Tauri R.	° ′ ″
May 2	61 . 31 . 55,67
June 14	55,67
Dec. 11	54,50

γ Orionis.	
Mar. 3	83 . 47 . 53,52
4	54,38
18	53,11

Σ 734.	
Mar. 3	91 . 50 . 4,96

λ Orionis.	
Feb. 21	80 . 10 . 36,77
23	36,54

ι Orionis.	
Mar. 8	96 . 1 . 4,12
18	4,80

Σ 758.	
Mar. 3	90 . 16 . 51,28
4	52,17

125 Tauri.	
Mar. 8	64 . 11 . 49,65

31 Camelopardali.	
Dec. 5	30 . 9 . 24,44

31 Camelopardali R.	
Dec. 5	30 . 9 . 25,38

β Aurigæ.	
Feb. 23	45 . 4 . 32,15
Mar. 3	33,40
18	32,31
Dec. 23	33,98

β Aurigæ R.	
Feb. 23	45 . 4 . 35,00
Mar. 3	33,48
18	34,86
Dec. 23	36,76

Σ 840.

	° ′ ″
Feb. 13	79 . 14 . 26,25

α Lyncis.

Jan. 4	28 . 26 . 38,37
Feb. 10	36,69
23	37,64
Mar. 4	37,96
Dec. 5	38,95

α Lyncis R.

Jan. 4	28 . 26 . 35,04
Feb. 10	36,46
23	37,85
Mar. 4	36,26
Dec. 5	37,32

Piazzi VI. 62.

Feb. 13	68 . 48 . 13,95
23	13,72

μ Geminorum.

Dec. 8	67 . 24 . 43,77

β Canis Majoris.

Feb. 10	107 . 52 . 57,75

β Canis Majoris R.

Feb. 10	107 . 52 . 58,80

15 Geminorum.

Jan. 5	69 . 7 . 12,39

✱ Æ. $6^h . 19^m . 50^s$.

Jan. 4	69 . 5 . 30,74

✱ Æ. $6^h . 21^m . 6^s$.

Jan. 4	69 . 7 . 13,49

γ Geminorum.

Dec. 8	73 . 28 . 21,83

ε Geminorum.

	° ′ ″
Mar. 1	64 . 43 . 10,36
23	9,08

15 Lyncis.

Jan. 5	31 . 22 . 49,08

15 Lyncis R.

Jan. 5	31 . 22 . 49,83

ω¹ Geminorum.

Jan. 2	65 . 33 . 59,92

Piazzi VI. 301.

Mar. 1	37 . 0 . 53,22
23	51,45

δ Geminorum.

Mar. 20	67 . 44 . 1,60
23	3,42
Dec. 8	5,13

δ Geminorum R.

Mar. 20	67 . 44 . 4,26
23	4,39
Dec. 8	2,81

Castor.

Jan. 24	57 . 46 . 23,86
Feb. 10	23,93
15	24,30
Mar. 1	24,40
2	24,30
7	24,17
June 15	23,41

Castor R.

Jan. 24	57 . 46 . 25,67
Feb. 10	24,92
15	25,11
Mar. 1	24,32
2	24,75
7	24,15
June 15	(28,52)

Procyon.

	° ′ ″
Jan. 2	84 . 22 . 39,04
Mar. 7	38,08
May 20	36,55
June 16	36,76
17	35,91

Procyon R.

Jan. 2	84 . 22 . 37,93
Mar. 7	37,16
May 20	37,26
June 16	40,09
17	38,44

Pollux.

June 16	61 . 35 . 58,28
17	59,46

Pollux R.

June 16	61 . 36 . 2,08
17	1,60

55 Camelopardali.

Jan. 18	21 . 4 . 22,94
24	21,89

55 Camelopardali R.

Jan. 18	21 . 4 . 21,99
24	21,70

Σ 1200.

Feb. 13	39 . 45 . 35,16

β Cancri.

Jan. 18	80 . 20 . 8,09

β Cancri R.

Jan. 18	80 . 20 . 6,46

ο Ursæ Majoris.

Jan. 18	28 . 45 . 50,50
28	50,96
Feb. 14	51,43

ο Ursæ Majoris R.

	° ′ ″
Jan. 18	28 . 45 . 49,86
28	50,45
Feb. 14	49,11

φ² Cancri.

Feb. 13	62 . 33 . 26,65
Apr. 7	26,22
11	26,53

ε Hydræ.

Jan. 28	83 . 0 . 32,84
Feb. 13	33,30
Mar. 23	34,14
25	32,86
28	33,05

ε Hydræ R.

Jan. 28	83 . 0 . 33,57
Feb. 13	33,64
Mar. 23	33,42
25	35,56
28	33,47

Σ 1288.

Mar. 23	60 . 57 . 29,32
25	28,32

ι Ursæ Majoris.

Jan. 28	41 . 20 . 47,50
Feb. 14	48,08
Mar. 28	48,19

ι Ursæ Majoris R.

Jan. 28	41 . 20 . 49,22
Feb. 14	47,10
Mar. 28	47,18

ο² Cancri.

Feb. 15	73 . 49 . 9,82
Mar. 23	12,12
25	8,94

σ^4 Cancri.	° ′ ″
Feb. 14	57 . 8 . 18,78

σ^2 Ursæ Majoris.	
Feb. 14	22 . 14 . 4,92

Σ 1312.	
Feb. 14	36 . 59 . 1,94
15	1,72

14 Leonis.	
Oct. 17	79 . 23 . 48,88

ψ Leonis.	
Mar. 23	75 . 15 . 46,64
Apr. 11	46,10

ε Leonis.	
Feb. 22	65 . 30 . 19,45
Mar. 3	20,75
21	19,37
27	19,92

ε Leonis R.	
Feb. 22	65 . 30 . 21,79
Mar. 3	20,25
21	21,83
27	21,08

υ Ursæ Majoris.	
Mar. 3	30 . 13 . 36,97

υ Ursæ Majoris R.	
Mar. 3	30 . 13 . 35,71

Σ 1396.	
Feb. 22	78 . 35 . 32,35

π Leonis.	
Feb. 22	81 . 12 . 18,92

Regulus.	
Sept. 28	77 . 16 . 5,36
Oct. 17	3,85

Regulus R.	° ′ ″
Sept. 28	77 . 16 . 3,97
Oct. 17	3,81

λ Ursæ Majoris.	
Mar. 23	46 . 18 . 14,31
25	15,08
27	15,38
Apr. 20	13,48

λ Ursæ Majoris R.	
Mar. 23	46 . 18 . 14,02
25	16,26
27	16,26
Apr. 20	15,82

44 Leonis.	
Mar. 25	80 . 25 . 9,43

μ Hydræ.	
Feb. 14	106 . 2 . 11,25
Mar. 23	11,41

μ Hydræ R.	
Feb. 14	106 . 2 . 13,42
Mar. 23	12,76

ρ Leonis.	
Oct. 18	79 . 53 . 15,72

54 Leonis.	
Apr. 10	64 . 24 . 49,47
18	48,62

α Ursæ Majoris.	
Mar. 25	27 . 24 . 10,99
Apr. 5	9,90
10	11,71
18	10,38
20	10,60
25	10,90
May 1	9,30
3	12,18
4	10,84
13	10,00

α Ursæ Majoris *continued.*	° ′ ″
Aug. 11	27 . 24 . 10,19
17	9,76
Sept. 5	11,82
7	10,50
Oct. 13	11,01
17	10,19
18	10,08

α Ursæ Majoris R.	
Mar. 25	27 . 24 . 10,35
Apr. 5	10,44
10	8,38
18	10,35
20	10,87
25	10,31
May 1	7,56
3	9,38
4	9,73
13	8,85
Aug. 11	9,32
17	9,31
Sept. 5	9,42
7	9,71
Oct. 13	9,88
17	9,86
18	10,05

Σ 1507.	
Mar. 25	82 . 7 . 2,70
Apr. 21	1,89
24	2,30

p^3 Leonis.	
Apr. 10	87 . 11 . 35,35
17	34,93
20	34,68
May 1	35,13

ψ Ursæ Majoris.	
Mar. 21	44 . 39 . 1,59
Apr. 5	1,34
May 3	1,89
4	1,45
13	0,79

ψ Ursæ Majoris R.	
Mar. 21	44 . 39 . 3,04
Apr. 5	2,15

ψ Ursæ Majoris R. *continued.*	° ′ ″
May 3	44 . 39 . 1,93
4	2,63
13	2,89

δ Leonis.	
Mar. 18	68 . 36 . 59,03
21	60,66
24	61,34
Apr. 5	59,23
10	59,63
20	58,35
24	59,34
May 1	58,93
3	60,04
13	59,33

δ Leonis R.	
Mar. 18	68 . 36 . 59,48
21	61,64
24	61,16
Apr. 5	61,62
10	60,75
20	61,88
24	61,69
May 1	61,25
3	61,28
13	61,65

ξ Ursæ Majoris.	
Apr. 10	57 . 35 . 15,53
May 1	14,51
3	17,08

ν Ursæ Majoris.	
Apr. 5	56 . 2 . 57,39
25	58,71
May 10	59,80

Σ 1541.	
Apr. 21	42 . 50 . 22,29
25	24,22

e Leonis.	
Dec. 14	92 . 8 . 17,15

Σ 1564.	
Apr. 24	62 . 10 . 24,61

Σ 1566.	° ′ ″
Apr. 5	68 . 5 . 33,05
17	32,55

ν Virginis.	
Apr. 5	82 . 35 . 26,42
17	26,86
20	25,73

∗ Æ. $11^h . 39^m . 34^s$.	
Apr. 17	83 . 14 . 13,51
20	14,12

β Leonis.	
May 1	74 . 32 . 59,06
June 6	59,60

β Leonis R.	
May 1	74 . 33 . 1,92
June 6	1,50

β Virginis.	
Dec. 14	87 . 21 . 2,53

B.A.C. 4006.	
Apr. 25	94 . 27 . 36,92
May 3	37,08
13	36,52

γ Ursæ Majoris.	
Mar. 17	35 . 25 . 54,98
Apr. 13	55,81
May 1	55,21
10	56,84
June 6	55,46
Oct. 18	56,53

γ Ursæ Majoris R.	
Mar. 17	35 . 25 . 56,10
Apr. 13	55,48
May 1	56,30
10	55,08
June 6	55,44
Oct. 18	56,02

∗ Æ. $11^h . 54^m . 23^s$.	° ′ ″
Apr. 17	84 . 54 . 17,84
20	17,49

ο Virginis.	
Apr. 13	80 . 23 . 41,57
May 10	41,69

ο Virginis R.	
Apr. 13	80 . 23 . 43,25
May 10	40,38

δ Ursæ Majoris.	
Mar. 17	32 . 5 . 41,01
Apr. 12	41,31
May 10	41,90

δ Ursæ Majoris R.	
Mar. 17	32 . 5 . 40,19
Apr. 12	39,35
May 10	39,59

η Virginis.	
June 6	89 . 47 . 36,95

η Virginis R.	
June 6	89 . 47 . 37,63

Σ 1634.	
Apr. 13	66 . 12 . 43,15

∗ Æ. $12^h . 13^m . 11^s$.	
May 13	64 . 6 . 6,95

∗ Æ. $12^h . 13^m . 32^s$.	
May 13	64 . 7 . 48,72

δ Corvi.	
May 10	105 . 38 . 25,05

δ Corvi R.	
May 10	105 . 38 . 27,30

B.A.C. 4218.	° ′ ″
Apr. 10	79 . 24 . 49,62

24 Comæ Berenices.	
Apr. 10	70 . 45 . 26,10

γ Virginis.	
Apr. 10	90 . 35 . 14,46

γ Virginis R.	
Apr. 10	90 . 35 . 13,30

Piazzi XII. 202.	
May 10	69 . 58 . 21,40

ψ Virginis.	
Dec. 14	98 . 41 . 4,84

ε Virginis.	
June 3	78 . 11 . 42,69
6	43,14

α Comæ Berenices.	
June 3	71 . 38 . 28,93

ζ Ursæ Majoris.	
May 1	34 . 15 . 10,12
3	12,07
June 3	10,58

∗ Æ. $13^h . 22^m . 41^s$.	
June 3	97 . 3 . 1,94
5	2,19

∗ Æ. $13^h . 26^m . 5^s$.	
June 3	97 . 48 . 34,56
5	35,37

ζ Virginis.	
Apr. 17	89 . 47 . 25,03

ζ Virginis R.	° ′ ″
Apr. 17	89 . 47 . 28,12

m Virginis.	
June 3	97 . 54 . 28,47
5	28,59

Piazzi XIII. 163.	
June 1	61 . 8 . 14,52

∗ Æ. $13^h . 36^m . 22^s$.	
June 3	98 . 32 . 34,98

∗ Æ. $13^h . 38^m . 56^s$.	
June 3	98 . 55 . 10,83
5	12,00

Σ 1783.	
May 1	48 . 10 . 18,51
June 1	18,64
5	18,44

η Ursæ Majoris.	
May 25	39 . 54 . 2,53
Sept. 13	3,32
Nov. 3	3,71

η Ursæ Majoris R.	
May 25	39 . 54 . 7,64
Sept. 13	6,10
Nov. 3	5,61

Σ 1785.	
May 1	62 . 13 . 55,77
June 1	56,24

η Bootis.	
May 25	70 . 48 . 43,69
29	43,81
June 5	43,20

η Bootis R.	
	° ′ ″
May 25	70 . 48 . 46,01
29	48,75
June 5	46,47

α Draconis.	
June 1	24 . 52 . 23,40

α Draconis R.	
June 1	24 . 52 . 21,34

Σ 1804.	
May 29	68 . 3 . 20,76
June 5	21,38

Arcturus.	
Sept. 1	69 . 59 . 48,79
8	48,77
Oct. 16	48,32
Nov. 28	49,23
Dec. 1	48,79

Arcturus R.	
Sept. 1	69 . 59 . 52,02
8	51,91
Oct. 16	50,52
Nov. 28	49,75
Dec. 1	49,83

Σ 1825.	
May 3	69 . 8 . 33,34
10	33,30

γ Bootis.	
June 1	51 . 0 . 7,12
5	7,37

γ Bootis R.	
June 1	51 . 0 . 8,06
5	8,97

Σ 1858. *n.*	
June 1	53 . 43 . 24,39

Σ 1858. *s.*	
	° ′ ″
June 5	53 . 43 . 26,56

π Bootis.	
May 29	72 . 54 . 15,89
June 1	15,61

Σ 1873.	
May 29	81 . 37 . 52,00
June 5	51,53

ε Bootis.	
May 4	62 . 15 . 37,40

ε Bootis R.	
May 4	62 . 15 . 37,27

Σ 1878.	
June 15	28 . 4 . 1,80
17	1,74

Σ 1882.	
June 3	28 . 14 . 8,45
15	9,05

α^1 Libræ.	
May 1	105 . 20 . 23,66
June 6	24,72

α^1 Libræ R.	
May 1	105 . 20 . 24,93
June 6	26,12

α^2 Libræ.	
May 1	105 . 23 . 4,61
June 6	6,00

α^2 Libræ.	
May 1	105 . 23 . 8,08
June 6	7,28

Σ 1886.	
June 15	79 . 37 . 37,75
17	37,05

β Ursæ Minoris.	
	° ′ ″
Apr. 24	15 . 12 . 10,66
May 10	11,18
13	11,34
29	9,43
June 3	11,07
5	10,42
15	9,49
28	10,73

β Ursæ Minoris R.	
Apr. 24	15 . 12 . 8,76
May 10	8,88
13	8,83
29	9,78
June 3	8,13
5	9,52
15	12,17
28	9,26

β Ursæ Minoris SP.	
Jan. 30	15 . 12 . 13,19
Feb. 13	13,86

β Ursæ Minoris SP. R.	
Jan. 30	15 . 12 . 11,38
Feb. 13	10,47

Σ 1896.	
June 3	45 . 19 . 23,01
5	23,27

Σ 1904.	
May 13	83 . 53 . 7,41
29	6,13

ι^1 Libræ.	
June 10	109 . 11 . 33,06

* Æ. $15^h . 7^m . 2^s$.	
May 13	97 . 14 . 32,06
29	39,23

β Libræ.	
June 10	98 . 47 . 55,12
July 6	56,31

β Libræ R.	
	° ′ ″
June 10	98 . 47 . 57,78
July 6	57,58

* Æ. $15^h . 8^m . 50^s$.	
May 13	97 . 16 . 29,53
29	28,89

Σ 1934.	
June 10	45 . 37 . 37,94
16	39,56

Σ 1935.	
June 10	58 . 43 . 55,00

* Æ. $15^h . 18^m . 59^s$.	
June 10	84 . 12 . 29,69

Σ 1942.	
June 16	67 . 59 . 8,33

Σ 1943.	
June 10	84 . 4 . 44,03

Σ 1952.	
May 29	79 . 48 . 4,11

α Coronæ Borealis.	
June 10	62 . 45 . 8,78
Oct. 14	9,31
18	10,13
Dec. 1	11,16

α Coronæ Borealis R.	
June 10	62 . 45 . 12,71
Oct. 14	12,33
18	12,60
Dec. 1	10,73

κ Libræ.	
June 10	109 . 9 . 51,31

		° ′ ″
γ Coronæ.	June 10	63 . 12 . 9,21
β Serpentis.	June 10	74 . 4 . 55,69
ζ Ursæ Minoris SP.	Jan. 30	11 . 43 . 33,81
	31	34,84
	Feb. 13	34,31
ζ Ursæ Minoris SP. R.	Jan. 30	11 . 43 . 33,56
	31	33,81
	Feb. 13	33,22
β^1 Scorpii.	June 26	109 . 22 . 11,69
	28	10,86
β^1 Scorpii R.	June 26	109 . 22 . 14,26
	28	14,12
θ Draconis.	July 8	31 . 0 . 48,95
	15	48,34
θ Draconis R.	July 8	31 . 0 . 48,96
	15	49,88
σ Scorpii.	June 28	115 . 12 . 34,19
τ Herculis.	June 15	43 . 18 . 34,39
	July 19	35,17
	21	33,64
τ Herculis R.	June 15	43 . 18 . 35,09
	July 19	34,84
	21	33,75

		° ′ ″
Antares.	June 10	116 . 4 . 37,47
η Draconis.	June 15	28 . 7 . 43,57
	Aug. 31	43,80
	Sept. 1	43,60
η Draconis R.	June 15	28 . 7 . 42,97
	Aug. 31	43,54
	Sept. 1	43,60
η Draconis SP.	Feb. 1	28 . 7 . 45,47
η Draconis SP. R.	Feb. 1	28 . 7 . 41,69
λ Ophiuchi.	Aug. 1	87 . 40 . 1,14
τ Scorpii.	June 10	117 . 52 . 58,36
	15	60,89
	20	62,62
	22	59,34
ζ Herculis.	Aug. 1	58 . 6 . 31,03
ζ Herculis R.	Aug. 1	58 . 6 . 33,26
g Draconis.	July 21	25 . 6 . 46,28
g Draconis R.	July 21	25 . 6 . 44,66
* Æ. $16^h . 42^m . 39^s$.	June 15	115 . 19 . 39,81

		° ′ ″
Σ 2104.	Aug. 7	53 . 48 . 1,27
21 Ophiuchi.	July 15	88 . 30 . 39,87
52 Herculis.	June 20	43 . 44 . 24,27
	22	24,01
	July 21	23,23
	Aug. 5	23,32
52 Herculis R.	June 20	43 . 44 . 24,10
	22	23,99
	July 21	24,75
	Aug. 5	25,11
* Æ. $16^h . 45^m . 24^s$.	June 26	86 . 42 . 48,80
	July 7	46,96
κ Ophiuchi.	June 20	80 . 22 . 32,75
	22	32,39
κ Ophiuchi R.	June 20	80 . 22 . 33,59
	22	34,87
h Draconis.	June 20	24 . 37 . 29,09
	July 14	28,69
	Aug. 5	28,54
	10	30,43
h Draconis R.	June 20	24 . 37 . 28,38
	July 14	28,22
	Aug. 5	30,59
	10	27,53

		° ′ ″
Σ 2120.	July 17	61 . 41 . 18,10
	Aug. 1	17,86
	5	17,49
* Æ. $16^h . 59^m . 16^s$.	July 17	61 . 41 . 36,57
	Aug. 1	36,33
ε Ursæ Minoris.	June 3	7 . 42 . 52,09
	20	54,49
ε Ursæ Minoris R.	June 3	7 . 42 . 50,55
	20	51,69
α Herculis.	June 20	75 . 25 . 32,69
	Aug. 7	33,09
	10	31,53
	19	32,06
	Sept. 29	31,60
α Herculis R.	June 20	75 . 25 . 34,47
	Aug. 7	32,69
	10	33,71
	19	33,90
	Sept. 29	32,47
Σ 2147.	Aug. 7	60 . 54 . 50,64
	10	51,03
ξ Ophiuchi.	July 15	110 . 56 . 16,40
ξ Ophiuchi R.	July 15	110 . 56 . 17,49
* Æ. $17^h . 11^m . 47^s$.	Aug. 7	60 . 55 . 16,53
	10	16,33

θ Ophiuchi.

		° ′ ″
Sept.	2	114 . 50 . 10,09

y Ophiuchi.

Aug.	1	117 . 58 . 58,00
	7	60,59
	10	60,60
	11	62,09

Σ 2178.

July	7	54 . 56 . 2,87
	14	3,51

α Ophiuchi.

Aug.	11	77 . 19 . 15,84
	16	14,77
	31	13,04
Sept.	4	15,25

α Ophiuchi R.

Aug.	11	77 . 19 . 15,15
	16	15,04
	31	13,24
Sept.	4	13,07

D Ophiuchi.

Aug.	5	111 . 35 . 58,12

ι Herculis.

Sept.	4	43 . 54 . 24,98

ι Herculis R.

Sept.	4	43 . 54 . 25,33

Σ 2213.

July	17	58 . 47 . 55,33
Aug.	1	56,38

γ Ophiuchi.

Aug.	7	87 . 13 . 41,66

γ Ophiuchi R.

Aug.	7	87 . 13 . 41,74

*** Æ. $17^h . 46^m . 15^s$.**

		° ′ ″
Aug.	7	48 . 9 . 57,36

*** Æ. $17^h . 46^m . 15$.**

Aug.	7	48 . 11 . 47,09

*** Æ. $17^h . 46^m . 38^s$.**

Aug.	7	48 . 15 . 56,01

4 Sagittarii.

Aug.	5	113 . 47 . 40,01

ξ Draconis.

July	17	33 . 6 . 2,14
	19	4,13
Sept.	4	3,56
	8	3,78

ξ Draconis R.

July	17	33 . 6 . 2,46
	19	1,20
Sept.	4	1,80
	8	2,64

70 Ophiuchi.

July	19	87 . 27 . 27,78
Aug.	1	26,37

70 Ophiuchi R.

July	19	87 . 27 . 26,95

Σ 2296.

Aug.	1	93 . 24 . 5,74
	7	7,61
	15	9,08

g Sagittarii.

Aug.	1	117 . 5 . 33,05
	7	32,89
	10	32,46
	16	32,36

η Serpentis.

Sept.	23	92 . 56 . 2,32

η Serpentis R.

Sept.	23	92 . 56 . 2,88

λ Sagittarii.

		° ′ ″
Sept.	2	115 . 30 . 6,68

*** Æ. $18^h . 20^m . 29^s$.**

Aug.	15	71 . 49 . 46,47
	16	44,97
	18	45,00

δ Ursæ Minoris.

May	25	3 . 24 . 26,60
	29	26,13
July	19	25,27
	21	24,84
Aug.	1	24,76
	4	24,11
	5	23,61
	7	23,45
	10	25,35
	11	24,89
	12	24,16
	14	25,07
	17	23,88
	31	23,51
Sept.	2	23,61
	5	23,89
	6	23,56
	7	23,95
	8	24,61
	9	24,53
	15	24,10
	20	22,53

δ Ursæ Minoris R.

May	25	3 . 24 . 21,86
	29	21,80
July	19	21,97
	21	22,60
Aug.	1	22,67
	4	23,22
	5	23,33
	7	23,58
	10	21,89
	11	23,47
	12	21,96
	14	22,37
	17	22,58
	31	23,08
Sept.	2	20,30
	5	23,24
	6	23,01
	7	22,64
	8	22,82
	9	23,47
	15	23,42
	20	24,03

δ Ursæ Minoris SP.

Feb.	22	3 . 24 . 23,37
	23	23,73

δ Ursæ Minoris SP. *continued.*

		° ′ ″
Aug.	2	3 . 24 . 23,77
	2	23,55

δ Ursæ Minoris SP. R.

Feb.	22	3 . 24 . 24,52
	23	24,29
Aug.	2	25,31
	2	25,21

e Serpentis.

Aug.	15	91 . 6 . 32,63
	16	31,50
	18	32,04
	21	31,16

α Lyræ.

Jan.	8	51 . 21 . 30,87
May	29	30,90
Aug.	1	29,78
	4	31,09
	7	30,33
	11	30,67
	12	30,28
	14	31,08
	15	31,26
	16	31,61
	17	30,46
	18	30,73
	21	31,09
	31	30,38
Sept.	2	30,27
	5	30,28
	6	30,64
	7	31,86
	8	30,95
	9	30,45
	15	29,80
	16	29,85
	20	30,70
	23	30,32
Oct.	18	30,39
Nov.	28	31,16
	29	29,92
Dec.	8	30,57

α Lyræ R.

Jan.	8	51 . 21 . 32,08
May	29	30,85
Aug.	1	32,42
	4	31,81
	7	31,69
	11	32,07
	12	31,76
	14	31,57
	15	32,42

α Lyræ R. *continued.*

	° ′ ″
Aug. 16	51 . 21 . 32,47
17	31,69
18	32,32
21	31,23
31	31,98
Sept. 2	31,29
5	32,11
6	31,57
7	31,90
8	31,87
9	32,22
15	31,71
16	31,43
20	32,25
23	32,33
Oct. 18	32,30
Nov. 28	31,28
29	31,48
Dec. 8	31,24

φ Sagittarii.

Sept. 2	117 . 8 . 43,06

Σ 2402.

Aug. 24	79 . 29 . 50,22
31	49,69
Sept. 2	52,09

✳ Æ. 18h. 42m. 36s.

Aug. 24	79 . 33 . 35,73
31	35,07
Sept. 2	38,04

β Lyræ.

Aug. 4	56 . 48 . 56,04
5	55,48

β Lyræ R.

Aug. 4	56 . 48 . 58,96
5	56,93

σ Sagittarii.

Aug. 7	116 . 29 . 5,78

ο Draconis.

Aug. 2	30 . 48 . 6,84
Sept. 2	6,49
5	7,03
6	6,84
9	7,45

ο Draconis R.

	° ′ ″
Aug. 2	30 . 48 . 7,10
Sept. 2	6,88
5	7,13
6	7,44
9	7,40

Σ 2437.

Sept. 2	71 . 3 . 3,63
5	3,35
7	4,67

✳ Æ. 18h. 55m. 4s.

Sept. 2	71 . 5 . 48,65
5	48,80
7	49,23

ο Sagittarii.

Aug. 7	111 . 57 . 53,10
Oct. 28	53,76

✳ Æ. 18h. 58m. 30s.

Aug. 11	54 . 26 . 51,01
17	51,72
Sept. 2	51,15

π Sagittarii.

Aug. 18	111 . 16 . 0,58
Sept. 6	1,61
8	15 . 59,59
9	16 . 0,16
12	0,10
22	1,15
23	0,61
26	2,92
27	0,01

π Sagittarii R.

Aug. 18	111 . 16 . 1,65
Sept. 6	1,33
8	1,53
9	1,40
12	2,51
22	1,76
23	3,78
26	2,41
27	1,99

✳ Æ. 19h. 5m. 34s.

Sept. 6	71 . 5 . 2,60

Σ 2482.

	° ′ ″
Sept. 5	71 . 7 . 17,28
8	17,52
9	18,69
12	18,05

Σ 2484.

Sept. 5	71 . 12 . 2,03
7	1,15
16	0,24

n Draconis.

Aug. 2	33 . 24 . 23,30
4	23,93

n Draconis R.

Aug. 2	33 . 24 . 22,76
4	21,29

Σ 2489.

Sept. 16	75 . 43 . 43,57
20	41,66
22	42,01

Σ 2490.

Sept. 6	93 . 45 . 0,51
9	44 . 59,68
12	59,93

ρ¹ Sagittarii.

Sept. 4	108 . 8 . 12,19
5	12,44

e¹ Sagittarii.

Oct. 28	106 . 38 . 50,11

θ Cygni.

July 24	40 . 8 . 23,36
Oct. 2	23,03

θ Cygni R.

July 24	40 . 8 . 22,61
Oct. 2	24,00

e² Sagittarii.

Aug. 8	106 . 29 . 9,35
Sept. 4	10,37

γ Aquilæ.

	° ′ ″
Apr. 20	79 . 45 . 51,41
July 24	53,51
Oct. 2	53,64

γ Aquilæ R.

Apr. 20	79 . 45 . 55,06
July 24	52,78
Oct. 2	52,80

δ Cygni.

July 31	45 . 14 . 56,42
Aug. 2	57,35
12	57,25
26	57,50
Oct. 18	56,01
19	56,47
Nov. 20	56,21

δ Cygni R.

July 31	45 . 14 . 56,52
Aug. 2	57,69
12	57,75
26	58,10
Oct. 18	57,65
19	57,56
Nov. 20	57,42

57 Sagittarii.

Oct. 28	109 . 26 . 15,57

α Aquilæ.

Oct. 16	81 . 32 . 29,42

α Aquilæ R.

Oct. 16	81 . 32 . 29,68

✳ Æ. 19h. 47m. 29s.

Aug. 10	67 . 49 . 1,65
11	0,16
12	0,33

β Aquilæ.

Aug. 8	83 . 58 . 50,10

β Aquilæ R.

	° ′ ″
Aug. 8	83 . 58 . 51,47

✳ Æ. 19ʰ. 47ᵐ. 58ˢ.

Aug. 14	67 . 58 . 42,76
18	42,22
Oct. 16	41,08

Σ 2600.

Aug. 10	67 . 54 . 26,45
11	26,79
12	24,83

ρ Draconis.

Oct. 2	22 . 34 . 24,75

ρ Draconis R.

Oct. 2	22 . 34 . 24,36

ρ Draconis SP.

Jan. 24	22 . 34 . 27,46

ρ Draconis SP. R.

Jan. 24	22 . 34 . 26,41

Σ 2651.

Sept. 1	74 . 18 . 42,93
Oct. 13	43,26

α¹ Capricorni.

July 24	102 . 59 . 19,08
Aug. 10	18,54
11	17,62
14	18,94
16	19,06
Sept. 4	18,88
27	19,25

α¹ Capricorni R.

July 24	102 . 59 . 18,54
Aug. 10	18,60
11	19,49
14	20,38
16	18,24
Sept. 4	19,39
27	18,22

α² Capricorni.

	° ′ ″
July 24	103 . 1 . 35,19
Aug. 10	34,90
11	34,03
14	34,92
16	35,49
Sept. 4	34,93
27	34,87

α² Capricorni R.

July 24	103 . 1 . 34,35
Aug. 10	34,98
11	36,08
14	36,44
16	36,23
Sept. 4	35,66
27	35,24

λ Ursæ Minoris SP.

Jan. 24	1 . 9 . 41,12

λ Ursæ Minoris SP. R.

Jan. 24	1 . 9 . 40,61

ω² Cygni.

Oct. 13	41 . 34 . 24,04

ω² Cygni R.

Oct. 13	41 . 34 . 24,38

υ Capricorni.

Sept. 4	108 . 41 . 11,72
5	10,46

α Cygni.

Jan. 2	45 . 16 . 40,93
Feb. 12	38,79
16	39,57
28	40,04
Mar. 1	40,07
6	40,65
24	39,74
Aug. 25	39,20
26	40,04
Oct. 13	39,66
19	38,89
Nov. 3	39,71
4	39,59
20	41,20

α Cygni *continued.*

	° ′ ″
Dec. 4	45 . 16 . 40,06
6	39,94
12	39,86

α Cygni R.

Jan. 2	45 . 16 . 39,14
Feb. 12	40,57
16	40,23
28	40,71
Mar. 1	40,51
6	40,23
24	39,82
Aug. 25	40,65
26	40,41
Oct. 13	40,62
19	41,08
Nov. 3	40,57
4	40,02
20	41,02
Dec. 4	41,11
6	39,50
12	41,47

ε Aquarii.

Sept. 1	100 . 3 . 57,81

ε Aquarii R.

Sept. 1	100 . 3 . 59,12

η Cephei.

Aug. 25	28 . 46 . 10,65
Oct. 13	10,01
19	10,18
Nov. 4	10,55

η Cephei R.

Aug. 25	28 . 46 . 9,55
Oct. 13	8,92
19	10,36
Nov. 4	9,55

61¹ Cygni.

Sept. 1	52 . 1 . 8,00
11	8,41
12	9,35
15	7,92
16	8,54
18	7,35

61¹ Cygni *continued.*

	° ′ ″
Sept. 20	52 . 1 . 8,26
22	8,46
27	9,65
Oct. 4	8,12
16	9,03
Nov. 11	9,10

61¹ Cygni R.

Sept. 1	52 . 1 . 10,25
11	8,68
12	9,19
15	8,90
16	9,15
18	8,86
20	9,02
22	8,86
27	7,45
Oct. 4	9,54
16	9,54
Nov. 11	9,28

ν Aquarii.

Sept. 5	102 . 0 . 8,93
Nov. 27	10,97

✳ Æ. 21ʰ. 2ᵐ. 19ˢ.

Oct. 13	99 . 59 . 13,53
16	12,77
18	12,64

ζ Cygni.

Aug. 21	60 . 24 . 49,91
Nov. 11	49,11

ζ Cygni R.

Aug. 21	60 . 24 . 50,41
Nov. 11	50,70

α Equulei.

Aug. 19	85 . 23 . 52,52
Oct. 4	51,64
5	52,30
Nov. 16	53,68

α Equulei R.

Aug. 19	85 . 23 . 50,44

α Equulei R. continued.	° ′ ″
Oct. 4	85 . 23 . 52,49
5	52,95
Nov. 16	51,73

Σ 2781.	° ′ ″
Sept. 12	98 . 18 . 21,76
13	23,64
16	21,44
18	19,92
20	20,62
22	22,07
23	19,72
27	22,28

* Æ. $21^h . 10^m . 39^s$.	° ′ ″
Sept. 12	97 . 47 . 42,05
13	43,63
16	42,02
20	41,45
22	42,40
23	41,52
27	42,60

α Cephei.	° ′ ″
Feb. 12	28 . 4 . 41,09
16	41,06
28	41,66
Mar. 6	41,46
Aug. 18	41,37
19	41,13
21	41,57
Sept. 12	41,82
15	41,14
16	40,59
18	40,33
20	40,31
22	40,78
23	40,65
26	43,47
27	42,72
Oct. 2	40,00
4	40,64
5	40,77
12	40,58
16	40,59
18	41,03
Nov. 3	40,99
7	39,53
11	40,89
16	40,82
27	39,23
Dec. 12	41,45

α Cephei R.	° ′ ″
Feb. 12	28 . 4 . 39,91
16	40,25
28	39,47

α Cephei R continued.	° ′ ″
Mar. 6	28 . 4 . 39,91
Aug. 18	39,48
19	39,87
21	40,67
Sept. 12	39,82
15	40,20
16	40,60
18	41,68
20	40,53
22	40,14
23	39,62
26	39,71
27	39,06
Oct. 2	41,03
4	40,52
5	40,82
12	39,15
16	39,96
18	40,40
Nov. 3	40,55
7	39,97
11	40,37
16	40,89
27	40,67
Dec. 12	38,71

α Cephei SP.	° ′ ″
Feb. 22	28 . 4 . 42,76

α Cephei SP. R.	° ′ ″
Feb. 22	28 . 4 . 42,54

β Aquarii.	° ′ ″
Aug. 10	96 . 15 . 29,67
Sept. 5	28,74
11	29,55
12	29,44

β Aquarii R.	° ′ ″
Aug. 10	96 . 15 . 30,32
Sept. 5	31,32
11	30,46
12	29,78

ε Pegasi.	° ′ ″
Aug. 24	80 . 50 . 30,21
Nov. 11	30,32

ε Pegasi R.	° ′ ″
Aug. 24	80 . 50 . 30,79
Nov. 11	31,00

δ Capricorni.	° ′ ″
Aug. 10	106 . 50 . 10,96

ν Cephei.	° ′ ″
Aug. 16	29 . 36 . 7,70
Nov. 20	7,47

ν Cephei R.	° ′ ″
Aug. 16	29 . 36 . 6,15
Nov. 20	7,81

π^2 Cygni.	° ′ ″
Oct. 5	41 . 24 . 51,78

π^2 Cygni R.	° ′ ″
Oct. 5	41 . 24 . 53,26

30 Aquarii.	° ′ ″
Sept. 7	97 . 16 . 40,43
Nov. 28	40,82

α Aquarii.	° ′ ″
Nov. 29	91 . 4 . 47,05

α Aquarii R.	° ′ ″
Nov. 29	91 . 4 . 47,08

ι Aquarii.	° ′ ″
Aug. 12	104 . 37 . 41,15

ι Aquarii R.	° ′ ″
Aug. 12	104 . 37 . 44,33

ζ Cephei.	° ′ ″
Jan. 2	32 . 34 . 15,67
Oct. 9	16,88

ζ Cephei R.	° ′ ″
Jan. 2	32 . 34 . 14,78
Oct. 9	15,69

θ Aquarii.	° ′ ″
Aug. 10	98 . 33 . 44,33
11	45,11
Sept. 7	44,45
Nov. 28	43,98

ε Cephei.	° ′ ″
Oct. 9	33 . 44 . 16,74

ε Cephei R.	° ′ ″
Oct. 9	33 . 44 . 14,62

ζ Aquarii. *n.*	° ′ ″
Oct. 9	90 . 49 . 13,07

ζ Aquarii. *n.* R.	° ′ ″
Oct. 9	90 . 49 . 14,54

ζ Aquarii. *s.*	° ′ ″
Aug. 10	90 . 49 . 17,54
11	17,69
Dec. 8	15,81

ζ Aquarii. *s.* R.	° ′ ″
Dec. 8	90 . 49 . 17,38

η Aquarii.	° ′ ″
Nov. 28	90 . 55 . 27,59
29	27,78

ι Cephei SP.	° ′ ″
Apr. 5	24 . 37 . 28,40

ι Cephei. SP. R.	° ′ ″
Apr. 5	24 . 37 . 28,90

λ Aquarii.	° ′ ″
Sept. 7	98 . 24 . 46,74

x^2 Piscium.	° ′ ″
Nov. 29	90 . 39 . 19,85

β Piscium.		
		° ′ ″
Aug.	11	87 . 1 . 26,60
Sept.	7	24,40
α Pegasi.		
Dec.	8	75 . 38 . 15,88
α Pegasi R.		
Dec.	8	75 . 38 . 16,57

γ Piscium.		
		° ′ ″
Aug.	11	87 . 34 . 28,47
ι Piscium.		
Nov.	29	85 . 13 . 26,60
γ Cephei SP.		
Mar.	17	13 . 14 . 38,56

γ Cephei SP. *continued.*		
		° ′ ″
Apr.	20	13 . 14 . 39,82
	21	38,81
γ Cephei SP. R.		
Mar.	17	13 . 14 . 37,48
Apr.	20	37,20
	21	38,00
ψ Andromedæ.		
Oct.	14	44 . 27 . 2,75

ψ Andromedæ R.		
		° ′ ″
Oct.	14	44 . 27 . 1,30
ω Piscium.		
Nov.	24	84 . 0 . 21,44
ω Piscium R.		
Nov.	24	84 . 0 . 17,51

CATALOGUE *of the* CONCLUDED MEAN NORTH POLAR DISTANCES, JAN. 1, 1843; *with the* ANNUAL VARIATIONS.

(The N.P.D. have been corrected for the Discordance of Zenith Points, and the Error of Assumed Co-latitude, in the manner explained in the Introduction.)

Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annual Variation.	Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annual Variation.
		h. m. s.	° ′ ″	″			h. m. s.	° ′ ″	″
α Andromedæ	2	0. 0.17	61.46.34,90	−20,055	α Ceti	2	2.54. 5	86.31.49,03	−14,541
α Andromedæ R.	2		33,92		α Ceti R.	2		47,33	
β Cassiopeiæ SP.	1	0. 0.50	31.42.58,96	−20,055	δ Arietis	1	3. 2.40	70.52.17,10	−14,015
β Cassiopeiæ SP. R.	1		57,00		α Persei	10	3.13. 9	40.42.11,73	−13,343
γ Pegasi	2	0. 5. 9	75.41.22,38	−20,050	α Persei R.	10		11,73	
γ Pegasi R.	2		21,95		σ Persei	2	3.19.32	42.33. 9,39	−12,919
d Piscium	1	0.12.32	82.40.56,07	−20,025	σ Persei R.	2		7,60	
α Cassiopeiæ	8	0.31.38	34.19.28,63	−19,864	ψ Persei	1	3.25.22	42.20. 7,94	−12,530
α Cassiopeiæ R.	8		28,53		ψ Persei R.	1		7,78	
β Ceti	1	0.35.42	108.50.57,84	−19,812	δ Persei	1	3.31.46	42.43.13,80	−12,087
β Ceti R.	1		57,87		δ Persei R.	1		13,33	
γ Cassiopeiæ	1	0.47.17	30. 8. 4,75	−19,630	d Pleiadum	2	3.36.41	66.32.45,41	−11,741
γ Cassiopeiæ R.	1		9,54		η Tauri	2	3.38.10	66.23. 6,88	−11,633
ε Piscium	2	0.54.48	82.57.23,61	−19,484	η Tauri R.	1		6,14	
ε Piscium R.	1		23,65		λ Tauri	1	3.51.59	77.57.30,24	−10,628
Polaris	17	1. 3. 1	1.31.39,81	−19,300	λ Tauri R.	1		29,87	
Polaris R.	17		39,71		A¹ Tauri	3	3.55.25	68.21. 9,24	−10,373
Polaris SP.	18		40,37		μ Persei	3	4. 3.23	41.59.47,26	−9,768
Polaris SP. R.	18		40,82		μ Persei R.	3		46,36	
ξ Andromedæ	1	1.13. 7	45.17.46,35	−19,045	Σ 520	3	4. 8.54	67.35. 0,16	−9,345
ξ Andromedæ R.	1		44,47		γ Tauri	1	4.10.52	74.45.27,47	−9,196
η Piscium	5	1.23. 5	75.27.55,56	−18,752	γ Tauri R.	1		24,36	
η Piscium R.	1		54,11		δ¹ Tauri	1	4.13.53	72.49.53,04	−8,955
101 Piscium	1	1.27.23	76. 8.32,21	−18,614	δ¹ Tauri R.	1		51,34	
51 Andromedæ	2	1.28.23	42.10.10,49	−18,581	υ¹ Tauri	2	4.16.55	67.32.53,79	−8,720
51 Andromedæ R.	2		11,53		Σ 559. *p.* and *f.*	2	4.24.28	72.19.12,38	−8,117
103 Piscium	1	1.30.48	74.10.24,44	−18,501	Aldebaran	3	4.26.55	73.48.42,69	−7,921
105 Piscium	2	1.31.13	74.23.33,59	−18,486	Aldebaran R.	3		43,33	
Σ 162*	1	1.39.33	42.53.15,81	−18,192	τ Tauri	3	4.32.50	67.21. 0,37	−7,445
4 Arietis	2	1.39.41	73.49.42,43	−18,189	α Camelopardali	1	4.38.29	23.56. 1,43	−6,983
1 Arietis	1	1.41.29	68.30.24,36	−18,120	α Camelopardali R.	1		2,69	
γ Arietis. *s.*	1	1.44.56	71.28.41,04	−17,990	ι Aurigæ	1	4.46.46	57. 5.21,32	−6,301
γ Arietis. *n.*	1		71.28.31,97	−17,990	ι Aurigæ R.	1		20,83	
β Arietis	1	1.45.59	69.57.42,84	−17,948	k Tauri	2	4.48.33	65.11.52,49	−6,149
B.A.C. 586.	1	1.47.47	88.55.49,63	−17,879	ε Aurigæ	3	4.50.43	46.24.57,65	−5,975
ι Arietis	3	1.48.47	72.57. 5,22	−17,839	ε Aurigæ R.	3		57,32	
γ Andromedæ. *sp.*	1	1.54.17	48.25.36,70	−17,614	η Aurigæ	2	4.55.31	48.59. 6,05	−5,570
γ Andromedæ R.	1		35,95		η Aurigæ R.	2		5,05	
10 Arietis. *sp.*	2	1.54.46	64.49.26,35	−17,594	β Eridani	3	5. 0. 8	95.17.40,92	−5,177
α Arietis	4	1.58.20	67.16.58,70	−17,440	β Eridani R.	3		39,47	
α Arietis R.	3		57,27		Σ 652. *nf.*	1	5. 3.40	89. 9.35,61	−4,890
Σ 221. *np.*	1	2. 1. 1	70.23.54,13	−17,324	ρ Orionis. *sp.*	3	5. 5. 5	87.19.52,43	−4,760
θ¹ Arietis	3	2. 9.24	70.49.40,31	−16,942	Capella	18	5. 5. 6	44.10. 9,19	−4,756
9 Persei	1	2.11.27	34.52.38,02	−16,848	Capella R.	17		9,32	
9 Persei R.	1		36,52		Σ 694	1	5.14.23	65.11.35,78	−3,963
ψ Arietis	3	2.22.13	72.59.37,34	−16,314	β Tauri	3	5.16.22	61.31.53,90	−3,792
ω Arietis	2	2.24.19	75.39.50,28	−16,208	β Tauri R.	3		54,71	
δ Ceti	1	2.31.27	90.21. 7,26	−15,835	γ Orionis	3	5.16.43	83.47.53,02	−3,762
δ Ceti R.	1		7,75		Σ 734†	1	5.25.11	91.50. 5,21	−3,037
⁎ (Mag. 8)	1	2.31.27	73.57. 2,40	−15,840	λ Orionis. *sp.*	2	5.26.29	80.10.36,82	−2,921
θ Persei. *sf.*	1	2.33.31	41.26.25,35	−15,723	ι Orionis. *np.*	2	5.27.45	96. 1. 4,82	−2,813
θ Persei R.	1		24,06		125 Tauri	1	5.30. 1	64.11.50,41	−2,618
μ Arietis	1	2.33.32	70.39.39,09	−15,723	Σ 758. *np.*	2	5.30. 8	90.16.51,94	−2,603
γ Ceti. *sf.*	1	2.35.10	87.25.44,58	−15,630	31 Camelopardali	1	5.40.54	30. 9.24,16	−1,668
γ Ceti R.	1		45,34		31 Camelopardali R.	1		25,84	
μ Ceti	1	2.36.28	80.33.10,43	−15,563	β Aurigæ	4	5.48. 1	45. 4.33,45	−1,050
η Persei. *sf.*	1	2.39.17	34.45.40,34	−15,405	β Aurigæ R.	4		34,72	
η Persei R.	1		40,42		Σ 840. *nf.*	1	5.57.46	79.14.26,46	−0,197
ε Arietis	1	2.50.15	69.17.28,53	−14,772	α Lyncis	5	6. 3.26	28.26.37,58	+0,299

* The two close stars observed as a single star. † The close double-star observed as single.

Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annual Variation.	Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annual Variation.
		h. m. s.	° ′ ″	″			h. m. s.	° ′ ″	″
a Lyncis R.	5	6. 3.26	28.26.37,01	+0,299	β Leonis.	2	11.41. 3	74.32.59,85	+19,987
Piazzi VI. 62.	2	6.11.51	68.48.14,57	+1,035	β Leonis R.	2		61,37	
μ Geminorum	1	6.13.28	67.24.44,51	+1,180	β Virginis.	1	11.42.31	87.21. 2,70	+19,997
β Canis Majoris.	1	6.15.47	107.52.58,55	+1,377	B.A.C. 4006	3	11.43. 1	94.27.37,16	+20,000
β Canis Majoris R.	1		58,18		γ Ursæ Majoris.	6	11.45.33	35.25.55,76	+20,016
15 Geminorum	1	6.18.25	69. 7.13,12	+1,610	γ Ursæ Majoris R.	6		55,97	
* (Mag. 8).	1	6.19.50	69. 5.31,47	+1,733	* (Mag. 9).	2	11.54.23	84.54.17,82	+20,049
* (Mag. 7, 8).	1	6.21. 6	69. 7.14,22	+1,842	o Virginis.	2	11.57.13	80.23.41,79	+20,054
γ Geminorum	1	6.28.39	73.28.22,40	+2,502	o Virginis R.	2		41,84	
ε Geminorum.	2	6.34.16	64.43.10,48	+2,986	δ Ursæ Majoris.	3	12. 7.38	32. 5.41,21	+20,044
15 Lyncis	1	6.43.40	30.22.48,81	+3,798	δ Ursæ Majoris R.	3		40,09	
15 Lyncis R.	1		50,28		η Virginis.	1	12.11.53	89.47.37,15	+20,028
ω¹ Geminorum	1	6.52.51	65.34. 0,67	+4,583	η Virginis R.	1		37,61	
Piazzi VI. 301. *np.*	2	6.53.10	37. 0.52,39	+4,611	Σ 1634. *np.*	1	12.12.47	66.12.43,90	+20,024
δ Geminorum. *nf.*	3	7.10.45	67.44. 4,12	+6,095	* (Mag. 7)	1	12.13.11	64. 6. 7,71	+20,022
δ Geminorum R.	3		3,26		* (Mag. 7).	1	12.13.32	64. 7.49,48	+20,021
Castor. *nf*	7	7.24.34	57.46.24,78	+7,237	δ Corvi	1	12.21.45	105.38.25,78	+19,965
Castor R.	6		24,27		δ Corvi R.	1		26,75	
Procyon.	5	7.31. 5	84.22.37,42	+8,745	B.A.C. 4218	1	12.22.36	79.24.49,82	+19,958
Procyon R.	5		38,21		24 Comæ Beren. *f.*	1	12.27.15	70.45.26,79	+19,914
Pollux	2	7.35.42	61.35.59,62	+8,137	γ Virginis.	1	12.33.42	90.35.14,67	+19,839
Pollux R.	2		61,27		γ Virginis R.	1		13,27	
55 Camelopardali	2	7.57. 6	21. 4.21,87	+9,806	Piazzi XII. 202	1	12.44. 9	69.58.22,12	+19,684
55 Camelopardali R.	2		22,58		ψ Virginis.	1	12.46.12	98.41. 5,30	+19,650
Σ 1200. *s.*	1	8. 4.25	39.45.35,39	+10,360	ε Virginis	2	12.54.22	78.11.43,20	+19,494
β Cancri.	1	8. 8. 0	80.20. 8,25	+10,628	α Comæ Berenices.	1	13. 2.21	71.38.29,58	+19,318
β Cancri R.	1		6,48		ζ Ursæ Majoris. *np.*	3	13.17.36	34.15.10,82	+18,917
o Ursæ Majoris.	3	8.17.10	28.45.50,63	+11,299	* (Mag. 8)	2	13.22.41	97. 3. 2,47	+18,765
o Ursæ Majoris R.	3		50,32		* (Mag. 7, 8).	2	13.26. 5	97.48.35,39	+18,657
φ² Cancri. *sp.*	3	8.17.17	62.33.27,23	+11,305	ζ Virginis	1	13.26.42	89.47.25,23	+18,638
ε Hydræ. *nf*	5	8.38.27	83. 0.33,39	+12,790	ζ Virginis R.	1		28,10	
ε Hydræ R.	5		33,96		*m* Virginis.	2	13.33.23	97.54.28,96	+18,412
Σ 1288. *sp.*	2	8.43.17	60.57.29,57	+13,108	Piazzi XIII. 163	1	13.33.24	61. 8.15,27	+18,412
ι Ursæ Majoris.	3	8.48.26	41.20.48,22	+13,451	* (Mag. 9)	1	13.36.22	98.32.35,43	+18,310
ι Ursæ Majoris R.	3		47,71		* (Mag. 7).	2	13.38.56	98.55.11,88	+18,216
o² Cancri.	3	8.48.49	73.49.10,84	+13,474	Σ 1783. *sp.*	3	13.39.20	48.10.19,12	+18,201
σ⁴ Cancri. *np.*	1	8.51.46	57. 8.19,51	+13,662	η Ursæ Majoris.	3	13.41.21	39.54. 3,42	+18,125
σ² Ursæ Majoris. *nf.*	1	8.56.30	22.14. 4,40	+13,963	η Ursæ Majoris R.	3		6,40	
Σ 1312. *np.*	2	8.59. 5	36.59. 1,88	+14,124	Σ 1785. *np.*	2	13.41.55	62.13.56,76	+18,105
14 Leonis	1	9.32.46	79.23.49,08	+16,056	η Bootis.	3	13.47.13	70.48.44,26	+17,900
ψ Leonis.	2	9.35.11	75.15.46,85	+16,182	η Bootis R.	3		46,57	
ε Leonis.	4	9.36.56	65.30.20,62	+16,275	α Draconis.	1	14. 0. 8	24.52.22,94	+17,361
ε Leonis R.	4		20,67		α Draconis R.	1		21,98	
υ Ursæ Majoris.	1	9.39.46	30.13.36,69	+16,416	Σ 1804. *sp.*	2	14. 0.56	68. 3.21,81	+17,328
υ Ursæ Majoris R.	1		36,17		Arcturus	5	14. 8.30	69.59.49,50	+18,943
Σ 1396. *np.*	1	9.47.58	78.35.32,61	+16,820	Arcturus R.	5		50,27	
π Leonis	1	9.51.55	81.12.19,08	+17,004	Σ 1825. *np.*	2	14. 9.15	69. 8.34,05	+16,950
Regulus	2	10. 0. 0	77.16. 4,95	+17,370	γ Bootis.	2	14.25.45	51. 0. 7,90	+16,135
Regulus R.	2		3,73		γ Bootis R.	2		8,05	
λ Ursæ Majoris.	4	10. 7.36	46.18.15,09	+17,690	Σ 1858. *nf.*	1	14.27. 9	53.43.25,08	+16,061
λ Ursæ Majoris R.	4		15,24		Σ 1858. *sp.*	1		53.43.27,25	+16,061
44 Leonis.	1	10.16.59	80.25. 9,59	+18,064	π Bootis. *np*	2	14.33.21	72.54.16,34	+15,732
μ Hydræ	2	10.18.30	106. 2.12,07	+18,120	Σ 1873. *np.*	2	14.37. 5	81.37.51,93	+15,526
μ Hydræ R.	2		12,53		ε Bootis. *sf.*	1	14.38. 8	62.15.38,15	+15,467
ρ Leonis	1	10.24.32	79.53.15,89	+18,339	ε Bootis R.	1		36,70	
54 Leonis. *np.*	2	10.47. 6	64.24.49,81	+19,049	Σ 1878. *sf.*	2	14.38. 9	28. 4. 1,42	+15,466
α Ursæ Majoris.	17	10.53.59	27.24.10,24	+19,230	Σ 1882. *sp.*	2	14.40.11	28.14. 8,39	+15,354
α Ursæ Majoris R.	17		10,18		α¹ Libræ.	2	14.42. 1	105.20.24,91	+15,250
Σ 1507. *np.*	3	10.57.58	82. 7. 2,46	+19,326	α¹ Libræ R.	2		24,99	
p³ Leonis	4	10.58.54	87.11.35,19	+19,347	α² Libræ	2	14.42.12	105.23. 6,03	+15,237
ψ Ursæ Majoris	5	11. 0.49	44.39. 1,89	+19,391	α² Libræ R.	2		7,14	
ψ Ursæ Majoris R.	5		2,23		Σ 1886. *nf.*	2	14.43.27	79.37.37,59	+15,169
δ Leonis.	10	11. 5.45	68.37. 0,32	+19,497	β Ursæ Minoris.	8	14.51.14	15.12. 9,85	+14,714
δ Leonis R.	10		60,69		β Ursæ Minoris R.	8		10,29	
ξ Ursæ Majoris. *np.*	3	11. 9.48	57.35.16,44	+19,577	β Ursæ Minoris SP.	2		12,74	
ν Ursæ Majoris. *np.*	3	11. 9.59	56. 2.59,35	+19,580	β Ursæ Min. SP. R.	2		11,54	
Σ 1541. *sp.*	2	11.19. 1	42.50.23,64	+19,735	Σ 1896. *sf.*	2	14.52.42	45.19.23,64	+14,628
e Leonis.	1	11.22.18	92. 8.17,40	+19,785	Σ 1904. *np.*	2	14.56.19	83.53. 6,92	+14,406
Σ 1564. *sp.*	1	11.31.24	62.10.25,36	+19,899	ι¹ Libræ.	1	15. 3.17	109.11.33,90	+13,916
Σ 1566. *sf.*	2	11.32.28	68. 5.33,54	+19,911	* (Mag. 8, 9).	2	15. 7. 2	97.14.36,05	+13,742
ν Virginis	3	11.37.47	82.35.26,49	+19,961	β Libræ.	2	15. 8.34	98.47.56,18	+13,640
* (Mag. 9)	2	11.39.34	83.14.13,97	+19,976	β Libræ R.	2		57,40	

Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annual Variation.
		h. m. s.	° ′ ″	″
✳ (Mag. 7, 8).	2	15. 8.50	97.16.29,62	+13,624
Σ 1934. *sp.*	2	15.11.52	45.37.39,26	+13,430
Σ 1935. *sf.*	1	15.13.36	58.43.55,74	+13,317
✳ (Mag. 7, 8)	1	15.18.59	84.12.29,84	+12,958
Σ 1942. *np.*	1	15.19. 5	67.59. 9,07	+12,953
Σ 1943. *np.*	1	15.19.51	84. 4.44,18	+12,902
Σ 1952. *nf.*	1	15.24.22	79.48. 4,28	+12,598
α Coronæ Borealis.	4	15.28. 3	62.45.10,61	+12,343
α Coronæ Bor. R.	4		11,51	
κ Libræ	1	15.32.55	109. 9.52,15	+12,005
γ Coronæ	1	15.36. 9	63.12. 9,97	+11,776
β Serpentis. *nf.*	1	15.38.57	74. 4.56,23	+11,581
ζ Ursæ Minoris SP.	3	15.49.48	11.43.33,87	+10,792
ζ Ursæ Min. SP. R.	3		33,80	
β^{1} Scorpii	2	15.56.19	109.22.12,12	+10,303
β^{1} Scorpii R.	2		13,53	
θ Draconis	2	15.58.57	31. 0.48,40	+10,103
θ Draconis R.	2		49,85	
σ Scorpii	1	16.11.39	115.12.35,12	+9,131
τ Herculis	3	16.15. 1	43.18.34,80	+8,870
τ Herculis R.	3	–	34,34	
Antares	1	16.19.47	116. 4.38,40	+8,490
η Draconis	3	16.21.53	28. 7.43,31	+8,326
η Draconis R.	3		43,90	
η Draconis SP.	1		44,45	
η Draconis SP. R.	1		42,53	
λ Ophiuchi. *sf.*	1	16.23. 0	87.40. 1,32	+8,237
τ Scorpii	4	16.26. 7	117.53. 1,24	+7,990
ζ Herculis	1	16.35.22	58. 6.31,76	+7,242
ζ Herculis R.	1		32,71	
g Draconis	1	16.39.50	25. 6.45,83	+6,873
g Draconis R.	1		45,29	
✳ (Mag. 7).	1	16.42.39	115.19.40,74	+6,640
Σ 2104. *sp.*	1	16.43. 4	53.48. 1,96	+6,605
21 Ophiuchi	1	16.43.28	88.30.40,06	+6,571
52 Herculis	4	16.44.38	43.44.24,13	+6,474
52 Herculis R.	4		24,25	
✳ (Mag. 3, 9)	2	16.45.24	86.42.48,05	+6,412
κ Ophiuchi	2	16.50.14	80.22.32,73	+6,010
κ Ophiuchi R.	2		34,25	
h Draconis	4	16.55.11	24.37.28,73	+5,598
h Draconis R.	4		29,32	
Σ 2120. *sf.*	3	16.58.32	61.41.18,57	+5,317
✳ (Mag. 8, 9)	2	16.59.16	61.41.37,20	+5,254
ε Ursæ Minoris	2	17. 2.16	7.42.52,49	+5,004
ε Ursæ Minoris R.	2		52,10	
α Herculis. *np.*	5	17. 7.30	75.25.32,66	+4,553
α Herculis R.	5		33,16	
Σ 2147. *np.*	2	17.11.26	60.54.51,59	+4,220
ξ Ophiuchi	1	17.11.36	110.56.17,27	+4,205
ξ Ophiuchi R.	1		16,80	
✳ (Mag. 7, 8).	2	17.11.47	60.55.17,18	+1,191
θ Ophiuchi	1	17.12.22	114.50.11,02	+4,141
y Ophiuchi	4	17.13.29	117.59. 1,26	+4,041
Σ 2178. *np.*	2	17.23.51	54.56. 3,90	+3,152
α Ophiuchi	4	17.27.39	77.19.15,07	+2,820
α Ophiuchi R.	4		13,97	
D Ophiuchi	1	17.34. 2	111.35.59,00	+2,270
ι Herculis	1	17.35. 3	43.54.25,41	+2,183
ι Herculis R.	1		25,08	
Σ 2213. *sf.*	2	17.38.55	58.47.56,60	+1,842
γ Ophiuchi	1	17.40. 1	87.13.41,83	+1,748
γ Ophiuchi R.	1		41,75	
✳ (Mag. 10).	1	17.46.15	48. 9.57,95	+1,203
✳ (Mag. 9).	1	17.46.15	48.11.47,68	+1,203
✳ (Mag. 9, 10)	1	17.46.58	48.15.56,60	+1,166
4 Sagittarii	1	17.50.12	113.47.40,92	+0,860
ξ Draconis	4	17.50.49	33. 6. 3,25	+0,802
ξ Draconis R.	4		2,36	
70 Ophiuchi. *np.*	2	17.57.31	87.27.27,25	+0,219
70 Ophiuchi R.	1		26,96	
Σ 2296. *sp.*	3	18. 7.28	93.24. 7,77	−0,656
g Sagittarii	4	18. 8.14	117. 5.33,63	−0,722
η Serpentis	1	18.13.11	92.56. 2,59	−1,152
η Serpentis R.	1		2,79	
λ Sagittarii	1	18.18.17	115.30. 7,61	−1,595
✳ (Mag. 8, 9)	3	18.20.29	71.49.46,02	−1,792
δ Ursæ Minoris	22	18.22.57	3.24.23,58	−1,993
δ Ursæ Minoris R.	22		23,68	
δ Ursæ Minoris SP.	4		24,22	
δ Ursæ Min. SP. R.	4		24,04	
e Serpentis	4	18.23.51	91. 6.32,06	−2,082
α Lyræ	28	18.31.37	51.21.31,29	−2,760
α Lyræ R.	28		31,35	
φ Sagittarii	1	18.35.51	117. 8.44,00	−3,123
Σ 2402	3	18.42.20	79.29.50,86	−3,684
✳ (Mag. 8)	3	18.42.36	79.33.36,47	−3,705
β Lyræ	2	18.44.17	56.48.56,48	−3,853
β Lyræ R.	2		57,41	
σ Sagittarii	1	18.45.32	116.29. 6,72	−3,956
o Draconis. *sf.*	5	18.48.53	30.48. 6,67	−4,241
o Draconis R.	5		7,63	
Σ 2437	3	18.55. 1	71. 3. 4,55	−4,767
✳ (Mag. 7)	3	18.55. 4	71. 5.49,56	−4,774
o Sagittarii	2	18.55.16	111.57.54,32	−4,788
✳ (Mag. 8)	3	18.58.30	54.26.51,99	−5,064
π Sagittarii	9	19. 0.25	111.16. 1,63	−5,226
π Sagittarii R.	9		1,34	
✳ (Mag. 8, 9)	1	19. 5.34	71. 3. 3,27	−5,661
Σ 2482. *sf.*	4	19. 6. 9	71. 7.18,56	−5,710
Σ 2484. *nf.*	3	19. 7.21	71.12. 1,81	−5,808
n Draconis	2	19. 8.42	33.24.23,48	−5,919
n Draconis R.	2		22,34	
Σ 2489. *sf.*	3	19. 9.15	75.43.42,85	−5,968
Σ 2490. *nf.*	3	19. 9.45	93.45. 0,34	−6,010
ρ^{1} Sagittarii	2	19.12.34	108. 8.13,12	−6,246
e^{1} Sagittarii	1	19.31.44	106.38.50,87	−7,816
θ Cygni	2	19.32.14	40. 8.23,45	−7,856
θ Cygni R.	2		23,24	
e^{2} Sagittarii	2	19.33.32	106.29.10,62	−7,957
γ Aquilæ	3	19.38.48	79.45.53,02	−8,382
γ Aquilæ R.	3		53,56	
δ Cygni. *sp.*	7	19.40. 4	45.14.57,24	−8,482
δ Cygni R.	7		57,21	
57 Sagittarii	1	19.43. 4	109.26.16,42	−8,720
α Aquilæ	1	19.43. 7	81.32.29,58	−8,724
α Aquilæ R.	1		29,70	
✳ (Mag. 8)	3	19.47.29	67.49. 1,45	−9,066
β Aquilæ	1	19.47.36	83.58.50,25	−8,536
β Aquilæ R.	1		51,50	
✳ (Mag. 7, 8)	3	19.47.58	67.58.42,76	−9,105
Σ 2600. *sp.*	3	19.48.28	67.54.26,76	−9,144
ρ Draconis	1	20. 2. 5	22.34.24,23	−10,185
ρ Draconis R.	1		25,06	
ρ Draconis SP.	1		26,49	
ρ Draconis SP. R.	1		27,20	
Σ 2651	2	20. 6.33	74.18.43,63	−10,523
α^{1} Capricorni	7	20. 8.56	102.59.19,40	−10,696
α^{1} Capricorni R.	7		18,53	
α^{2} Capricorni	7	20. 9.20	103. 1.35,53	−10,729
α^{2} Capricorni R.	7		35,12	
λ Ursæ Minoris SP.	1	20.19. 6	1. 9.41,83	−11,410
λ Ursæ Min. SP. R.	1		39,72	
ω^{2} Cygni	1	20.25.12	41.34.24,36	−11,871
ω^{2} Cygni R.	1		24,24	
υ Capricorni	2	20.31. 6	108.41.11,91	−12,284
α Cygni	17	20.36. 5	45.16.40,38	−12,628
α Cygni R.	17		40,13	
ε Aquarii	1	20.39.11	100. 3.58,31	−12,835
ε Aquarii R.	1		58,80	
η Cephei	4	20.42. 5	28.46.10,02	−13,030
η Cephei R.	4		10,11	
61^{1} Cygni. *np.*	12	20.59.52	52. 1. 9,19	−17,470
61^{1} Cygni R.	12		8,57	

Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annual Variation.
		h. m. s.	° ′ ″	″
ν Aquarii............	2	21. 1. 2	102. 0. 10,53	− 14,243
⁎ (Mag. 7, 8)	3	21. 2. 19	99. 59. 13,48	− 14,325
ζ Cygni.............	2	21. 6. 15	60. 24. 50,26	− 14,565
ζ Cygni R..........	2		49,99	
α Equulei...........	4	21. 7. 58	85. 23. 52,68	− 14,668
α Equulei R.........	4		51,93	
Σ 2781. *np*..........	8	21. 8. 21	98. 18. 21,87	− 14,688
⁎ (Mag. 8)..........	7	21. 10. 39	97. 47. 42,66	− 14,826
α Cephei............	28	21. 14. 50	28. 4. 40,64	− 15,069
α Cephei R.........	28		40,67	
α Cephei SP.........	1		41,74	
α Cephei SP. R.....	1		43,38	
β Aquarii...........	4	21. 23. 17	96. 15. 29,72	− 15,548
β Aquarii R.........	4		30,28	
ε Pegasi.............	2	21. 36. 28	80. 50. 30,43	− 16,251
ε Pegasi R..........	2		30,92	
δ Capricorni.........	1	21. 38. 22	106. 50. 11,72	− 16,346
ν Cephei.............	2	21. 40. 55	29. 36. 7,28	− 16,474
ν Cephei R.	2		7,46	
π^2 Cygni..........	1	21. 41. 0	41. 24. 52,09	− 16,479
π^2 Cygni R..........	1		53,13	
30 Aquarii..........	2	21. 55. 1	97. 16. 41,04	− 17,145
α Aquarii...........	1	21. 57. 43	91. 4. 47,28	− 17,269
α Aquarii R.........	1		47,03	
ι Aquarii............	1	21. 57. 57	104. 37. 41,84	− 17,277
ι Aquarii R..........	1		43,82	

Name of Star.	Number of Observations.	Approximate Mean R.A. Jan. 1, 1843.	Mean N.P.D. Jan. 1, 1843.	Annua Variatio
		h. m. s.	° ′ ″	″
ζ Cephei............	2	22. 5. 25	32. 34. 16,10	− 17,6
ζ Cephei R..........	2		15,59	
θ Aquarii...........	4	22. 8. 33	98. 33. 44,92	− 17,7
ε Cephei............	1	22. 9. 16	33. 44. 16,61	− 17,7
ε Cephei R..........	1		14,93	
ζ Aquarii. *np*.	1	22. 20. 45	90. 49. 13,29	− 18,2
ζ Aquarii R..........	1		14,50	
ζ Aquarii. *sf*.........	3	22. 20. 45	90. 49. 17,23	− 18,2
ζ Aquarii R..........	1		17,34	
η Aquarii...........	2	22. 27. 17	90. 55. 27,90	− 18,4
ι Cephei SP.........	1	22. 44. 6	24. 37. 27,41	− 18,9
ι Cephei SP. R......	1		29,71	
λ Aquarii...........	1	22. 44. 25	98. 24. 47,18	− 18,9
x^2 Piscium..........	1	22. 52. 35	90. 39. 20,07	− 19,1
β Piscium...........	2	22. 55. 53	87. 1. 25,67	− 19,2
α Pegasi.............	1	22. 56. 57	75. 38. 16,34	− 19,3
α Pegasi R.	1		16,29	
γ Piscium...........	1	23. 9. 2	87. 34. 28,65	− 19,5
ι Piscium............	1	23. 31. 53	85. 13. 26,75	− 19,3
γ Cephei SP.........	3	23. 32. 58	13. 14. 38,46	− 19,9
γ Cephei SP. R. ...	3		37,98	
ψ Andromedæ......	1	23. 38. 16	44. 27. 3,21	− 19,9
ψ Andromedæ R...	1		1,02	
ω Piscium...........	1	23. 51. 15	84. 0. 21,59	− 20,0
ω Piscium R.........	1		17,54	

SIDEREAL INTERVALS OCCUPIED BY TRANSITS OF DIAMETERS,

AND

VERTICAL DIAMETERS,

OF THE

SUN, MOON, AND THE PLANET MARS,

DEDUCED

FROM THE TRANSIT AND CIRCLE OBSERVATIONS, AND COMPARED WITH THE VALUES IN THE NAUTICAL ALMANAC.

1843.

I. SIDEREAL INTERVALS *occupied by* TRANSITS *of the* SUN'S DIAMETER, *and* VERTICAL DIAMETERS *of the* SUN; *compared with the values in the* NAUTICAL ALMANAC.

Day of Observation.	Interval by Observation.	Seconds of Tabular Interval.	Excess of Tabular Interval.	Vertical Diameter by Observation.	Seconds of Tabular Diameter.	Excess of Tabular Diamr.
1843.	m. s.	s.	s.	′ ″	″	″
Jan. 2	2 . 21,93	21,90	− 0,03	32 . 31,63	34,60	+ 2,97
9	21,03	21,06	+ 0,03	33,54	34,40	+ 0,86
10	20,94	20,90	− 0,04	33,38	34,20	+ 0,82
16	19,86	19,88	+ 0,02	33,06	33,60	+ 0,54
25	17,93	18,02	+ 0,09	30,84	31,60	+ 0,76
26	17,72	17,80	+ 0,08	34,51	31,40	− 3,11
30	16,83	16,90	+ 0,07	27,03	30,40	+ 3,37
Feb. 1	16,39	16,44	+ 0,05	29,77	29,80	+ 0,03
10	14,38	14,40	+ 0,02	24,18	26,80	+ 2,62
13	13,73	13,74	+ 0,01	20,62	25,80	+ 5,18
17	12,96	12,90	− 0,06	21,96	24,00	+ 2,04
Mar. 7	9,94	9,96	+ 0,02	13,78	15,40	+ 1,62
17	9,04	9,08	+ 0,04	8,16	10,20	+ 2,04
18	8,97	9,02	+ 0,05	7,79	9,60	+ 1,81
20	8,78	8,94	+ 0,16	7,83	8,60	+ 0,77
21	8,78	8,90	+ 0,12	4,72	8,00	+ 3,28
22	8,80	8,86	+ 0,06	7,02	7,40	+ 0,38
23				6,67	6,80	+ 0,13
24	8,68	8,82	+ 0,14	5,22	6,40	+ 1,18
25	8,78	8,80	+ 0,02	4,05	5,80	+ 1,75
27	8,66	8,78	+ 0,12	4,78	4,60	− 0,18
29	8,90	8,80	− 0,10	4,45	3,60	− 0,85
Apr. 5	9,01	9,02	+ 0,01	31 . 58,79	59,60	+ 0,81
8	9,08	9,20	+ 0,12	57,48	58,00	+ 0,52
11	9,47	9,42	− 0,05	54,74	56,40	+ 1,66
17	9,94	10,00	+ 0,06	51,57	53,20	+ 1,63
18	10,01	10,12	+ 0,11	54,57	52,80	− 1,77
19	10,03	10,24	+ 0,21	49,34	52,20	+ 2,86
20	10,36	10,36	0,00	50,67	51,60	+ 0,93
24	10,97	10,88	− 0,09	48,07	49,60	+ 1,53
May 1	11,89	11,90	+ 0,01	42,85	46,20	+ 3,35
2	12,11	12,04	− 0,07	46,16	45,60	− 0,56
3	12,47	12,20	− 0,27	42,75	45,20	+ 2,45
4	12,29	12,36	+ 0,07	45,16	44,80	− 0,36
11	13,44	13,50	+ 0,06	39,27	41,80	+ 2,53
16	14,34	14,32	− 0,02	41,22	39,80	− 1,42
20	14,99	14,96	− 0,03	40,25	38,20	− 2,05
22				37,69	37,40	− 0,29
26	15,85	15,82	− 0,03	37,45	36,20	− 1,25
June 3	16,91	16,80	− 0,11	32,65	33,80	+ 1,15
8	17,32	17,26	− 0,06	33,52	32,80	− 0,72
9	17,40	17,34	− 0,06	30,75	32,60	+ 1,85
15	17,69	17,68	− 0,01	30,10	31,40	+ 1,30
16	17,70	17,72	+ 0,02	31,51	31,40	− 0,11
17	18,00	17,74	− 0,26	28,67	31,20	+ 2,53
21	17,99	17,76	− 0,23	27,39	30,60	+ 3,21
22	17,57	17,76	+ 0,19	31,31	30,60	− 0,71
27	17,91	17,64	− 0,27	29,10	30,20	+ 1,10
28	17,90	17,60	− 0,30			
July 8	16,94	16,82	− 0,12	29,92	30,20	+ 0,28
15	15,99	15,96	− 0,03	31,60	30,80	− 0,80
17	15,64	15,68	+ 0,04	27,16	31,00	+ 3,84
20	15,11	15,22	+ 0,11	31,33	31,40	+ 0,07
27	14,00	14,10	+ 0,10	29,86	32,80	+ 2,94
28	13,79	13,92	+ 0,13	34,14	33,00	− 1,14
Aug. 4	12,71	12,70	− 0,01			
5	12,49	12,54	+ 0,05	32,94	35,00	+ 2,06
8	11,92	12,02	+ 0,10	37,40	35,80	− 1,60
11	2 . 11,44	11,54	+ 0,10	31 . 33,82	36,80	+ 2,98

Day of Observation.	Interval by Observation.	Seconds of Tabular Interval.	Excess of Tabular Interval.	Vertical Diameter by Observation.	Seconds of Tabular Diameter.	Excess of Tabular Diamr.
1843.	m. s.	s.	s.	′ ″	″	″
Aug. 12	2 . 11,11	11,38	+ 0,27	31 . 36,03	37,00	+ 0,97
14	10,95	11,06	+ 0,11	38,40	37,60	− 0,80
17	10,57	10,60	+ 0,03	38,02	38,80	+ 0,78
18	10,61	10,44	− 0,17	37,86	39,20	+ 1,34
19	10,25	10,30	+ 0,05	37,02	39,60	+ 2,58
21	9,98	10,02	+ 0,04	39,95	40,40	+ 0,45
23	9,76	9,76	0,00	40,03	41,20	+ 1,17
26	9,26	9,38	+ 0,12	42,51	42,40	− 0,11
30	9,03	8,94	− 0,09	44,78	44,20	− 0,58
Sept. 2	8,85	8,68	− 0,17	44,74	45,80	+ 1,06
4	8,50	8,52	+ 0,02	46,78	46,80	+ 0,02
5	8,50	8,44	− 0,06	45,27	47,20	+ 1,93
6	8,34	8,38	+ 0,04	46,72	47,80	+ 1,08
7	8,11	8,32	+ 0,21	48,75	48,20	− 0,55
8	8,24	8,26	+ 0,02	49,49	48,80	− 0,69
9	8,14	8,20	+ 0,06	47,03	49,20	+ 2,17
11	8,07	8,12	+ 0,05	49,18	50,20	+ 1,02
13	8,07	8,06	− 0,01	49,98	51,20	+ 1,22
15	7,83	8,02	+ 0,19	51,19	52,20	+ 1,01
16	7,99	8,02	+ 0,03	52,07	52,80	+ 0,73
18	7,95	8,00	+ 0,05	51,33	53,80	+ 2,47
20	8,06	8,04	− 0,02	54,18	54,80	+ 0,62
21	8,04	8,06	+ 0,02	56,04	55,40	− 0,64
22	8,04	8,08	+ 0,04	53,24	55,80	+ 2,56
26	8,16	8,24	+ 0,08	57,65	57,80	+ 0,15
27	8,24	8,30	+ 0,06	60,01	58,40	− 1,61
28	8,31	8,36	+ 0,05	58,31	59,00	+ 0,69
29	8,39	8,42	+ 0,03	31 . 60,70	59,60	− 1,10
Oct. 2	8,60	8,68	+ 0,08	32 . 2,03	1,40	− 0,63
10	9,41	9,58	+ 0,17	6,70	5,80	− 0,90
13	9,96	10,00	+ 0,04	6,25	7,60	+ 1,35
14	10,07	10,16	+ 0,09	6,98	8,20	+ 1,22
16	10,39	10,48	+ 0,09	10,23	9,20	− 1,03
18	10,80	10,82	+ 0,02	9,80	10,20	+ 0,40
19	10,95	11,00	+ 0,05	8,83	10,80	+ 1,97
20	11,14	11,18	+ 0,04	10,05	11,20	+ 1,15
21	11,28	11,36	+ 0,08	10,36	11,80	+ 1,44
27	12,65	12,58	− 0,07	14,69	15,00	+ 0,31
Nov. 3	14,16	14,14	− 0,02	16,28	18,60	+ 2,32
4	14,28	14,36	+ 0,08	17,71	19,00	+ 1,29
9	15,63	15,56	− 0,07	21,00	21,60	+ 0,60
11	16,02	16,04	+ 0,02	21,01	22,40	+ 1,39
13	16,30	16,50	+ 0,20	24,68	23,20	− 1,48
16	17,04	17,20	+ 0,16	23,27	24,40	+ 1,13
18	17,70	17,66	− 0,04	24,08	25,20	+ 1,12
20	18,14	18,12	− 0,02	22,92	26,00	+ 3,08
23	18,66	18,78	+ 0,12	28,21	27,20	− 1,01
27	19,61	19,60	− 0,01	29,37	28,40	− 0,97
28	19,74	19,80	+ 0,06	25,87	28,80	+ 2,93
29	20,06	19,98	− 0,08	24,82	29,00	+ 4,18
Dec. 2	20,52	20,52	0,00	29,39	30,00	+ 0,61
6	21,33	21,16	− 0,17			
8	21,38	21,42	+ 0,04			
11	21,83	21,78	− 0,05			
12	21,89	21,88	− 0,01	31,60	32,60	+ 1,00
14	22,08	22,04	− 0,04	31,91	33,00	+ 1,09
15	22,10	22,12	+ 0,02	32,93	33,20	+ 0,27
22	22,50	22,40	− 0,10	32 . 33,87	34,00	+ 0,13
23	2 . 22,43	22,40	− 0,03			

II. SIDEREAL INTERVALS *occupied by* TRANSITS *of the* MOON'S DIAMETER, *and* VERTICAL DIAMETERS *of the* MOON; *compared with the values in the* NAUTICAL ALMANAC.

Day of Obser-vation.	Interval by Obser-vation.	Tabular Interval.	Excess of Tabular Interval.	Calculated Excess of Tabular Diameter.	Day of Obser-vation.	Vertical Diameter by Observation.	Tabular Diameter.	Excess of Tabular Diam^r.
1843.	m. s.	m. s.	s.	"	1843.	′ ″	′ ″	″
May 13	2 . 28,28	2 . 28,12	− 0,16	− 2,13	June 10	32 . 33,24	32 . 30,22	− 3,02
Dec. 6	2 . 15,17	2 . 15,10	− 0,07	− 0,93	Sept. 7	29 . 58,30	29 . 55,38	− 2,92
					Nov. 6	29 . 30,19	29 . 26,32	− 3,87

III. SIDEREAL INTERVALS *occupied by* TRANSITS *of the* DIAMETER *of* MARS, *and comparison of the calculated* DIAMETERS *with the values in the* NAUTICAL ALMANAC.

Day of Observation.	Interval by Obser-vation.	Measured Diameter.	Correction for Defect of Illumi-nation.	Diameter by Obser-vation.	Tabular Diameter.	Excess of Tabular Diameter.
1843.	s.	″	″	″	″	″
June 3	1,67	22,69	+ 0,01	22,70	18,80	− 3,90
15	1,65	23,39	+ 0,13	22,52	19,20	− 3,32
20	1,50	20,37	+ 0,26	20,63	19,20	− 1,43
22	1,57	21,30	+ 0,34	21,64	19,00	− 2,64

IV. VERTICAL DIAMETERS *of* MARS; *compared with the values in the* NAUTICAL ALMANAC.

Day of Observation.	Vertical Diameter by Observation.	Tabular Diameter.	Excess of Tabular Diameter.
1843.	"	"	"
June 5	20,07	19,00	– 1,07
15	21,60	19,20	– 2,40
20	21,41	19,20	– 2,21
22	20,26	19,00	– 1,26
26	21,62	18,80	– 2,82
28	21,01	18,60	– 2,41
July 7	20,41	17,80	– 2,61
15	19,67	16,80	– 2,87
17	19,69	16,60	– 3,09
19	18,76	16,40	– 2,36
21	19,10	16,20	– 2,90
Aug. 1	15,78	14,80	– 0,98
2	16,43	14,80	– 1,63
5	14,12	14,40	+ 0,28
7	14,20	14,20	0,00
10	16,01	13,80	– 2,21
11	14,86	13,60	– 1,26
12	14,54	13,60	– 0,94
14	14,33	13,40	– 0,93
15	15,86	13,20	– 2,66
16	15,20	13,20	– 2,00
17	14,54	13,00	– 1,54
18.	15,09	13,00	– 2,09
21	13,34	12,80	– 0,54
24	13,34	12,40	– 0,94
26	14,65	12,20	– 2,45
29	12,97	12,00	– 0,97
Sept. 1	13,12	11,60	– 1,52
2	13,55	11,60	– 1,95
4	13,03	11,40	– 1,63
5	12,99	11,20	– 1,79
Sept. 6	13,24	11,20	– 2,04
7	11,25	11,20	– 0,05
8	12,57	11,00	– 1,57
9	12,03	11,00	– 1,03
12	12,26	10,80	– 1,46
13	12,45	10,80	– 1,65
15	12,55	10,60	– 1,95
16	12,74	10,40	– 2,34
22	13,74	10,20	– 3,54
23	12,49	10,00	– 2,49
26	13,51	9,80	– 3,71
27	12,95	9,80	– 3,15
28	12,70	9,80	– 2,90
29	10,57	9,60	– 0,97
Oct. 6	15,50	9,20	– 6,30
13	10,82	8,80	– 2,02
16	11,71	8,60	– 3,11
18	12,15	8,60	– 3,55
19	10,61	8,40	– 2,21
28	13,27	8,00	– 5,27
Nov. 3	10,26	7,80	– 2,46
4	9,12	7,80	– 1,32
8	10,30	7,60	– 2,70
9	10,26	7,60	– 2,66
11	10,09	7,40	– 2,69
16	10,50	7,20	– 3,30
18	9,99	7,20	– 2,79
20	12,09	7,00	– 5,09
28	10,80	6,80	– 4,00
29	10,48	6,80	– 3,68
Dec. 8	11,09	6,40	– 4,69

CONCLUDED

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES

OF THE CENTERS OF THE

SUN, MOON, AND PLANETS,

OBSERVED IN THE YEAR 1843,

COMPARED WITH THE RIGHT ASCENSIONS AND NORTH POLAR DISTANCES
INTERPOLATED FROM THE NAUTICAL ALMANAC;

WITH THE

GREENWICH MEAN SOLAR TIMES OF OBSERVATION.

Greenwich Mean Solar Time of Transit of Center.	Limb Observed.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	Limb Observed.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.		h. m. s.	s.	s.		° ′ ″	″	″
Jan. 2. 0. 3.48,1		18.50. 5,77	5,70	−0,07		112.57.38,02	37,49	−0,53
9. 0. 6.55,5		19.20.49,60	49,51	−0,09		112. 9.36,10	35,24	−0,86
10. 0. 7.20,2		19.25.10,97	10,87	−0,10		112. 0.57,42	57,75	+0,33
16. 0. 9.35,7		19.51. 6,17	5,96	−0,21		111. 0.21,56	21,99	+0,43
25. 0.12.11,6		20.29.11,49	11,38	−0,11		109. 2.46,19	48,04	+1,85
26. 0.12.25,2		20.33.21,65	21,51	−0,14		108.47.52,16	54,45	+2,29
30. 0.13.11,6		20.49.54,42	54,00	−0,42		107.44.56,38	58,67	+2,29
Feb. 1. 0.13.29,4		20.58. 5,39	5,32	−0,07		107.11.34,86	35,38	+0,52
10. 0.14.10,1		21.34.15,23	15,05	−0,18		104.27.12,59	14,72	+2,13
13. 0.14. 9,1		21.46. 3,90	3,66	−0,24		103.27.53,84	55,23	+1,39
17. 0.13.57,1		22. 1.38,03	37,91	−0,12		102. 5.46,21	46,94	+0,73
Mar. 3. 0.11.54,0						96.56.50,50	50,78	+0,28
7. 0.10.59,6		23. 9.38,02	37,96	−0,06		95.24.16,73	16,58	−0,15
17. 0. 8.17,3		23.46.20,86	20,64	−0,22		91.28.47,54	49,99	+2,45
18. 0. 7.59,7		23.49.59,71	59,43	−0,28		91. 5. 8,48	8,29	−0,19
20. 0. 7.23,6		23.57.16,65	16,51	−0,14		90.17.43,80	44,59	+0,79
21. 0. 7. 1,4		0. 0.55,02	54,86	−0,16		89.54. 1,85	3,09	+1,24
22. 0. 6.47,2		0. 4.33,24	33,10	−0,14		89.30.21,61	22,39	+0,78
23. 0. 6.28,9	I.	0. 8.11,50	11,26	−0,24		89. 6.40,84	42,89	+2,05
24. 0. 6.10,5		0.11.49,52	49,35	−0,17		88.43. 3,68	4,89	+1,21
25. 0. 5.52,0		0.15.27,57	27,40	−0,17		88.19.26,61	28,69	+2,08
27. 0. 5.15,0		0.22.43,61	43,47	−0,14		87.32.22,00	23,38	+1,38
29. 0. 4.38,2		0.29.59,72	59,59	−0,13		86.45.28,32	30,08	+1,76
Apr. 5. 0. 2.31,5		0.55.28,60	28,34	−0,26		84. 3.38,62	40,67	+2,05
8. 0. 1.39,3		1. 6.25,92	25,61	−0,31		82.55.43,97	46,37	+2,40
11. 0. 0.48,9		1.17.25,05	24,79	−0,26		81.48.56,68	57,46	+0,78
16.23.59.15,8		1.39.30,99	30,99	−0,00		79.39. 9,30	10,64	+1,34
17.23.59. 1,8		1.43.13,51	13,28	−0,23		79.18. 4,83	6,44	+1,61
18.23.58.47,9		1.46.56,17	55,96	−0,21		78.57.10,51	12,64	+2,13
19.23.58.34,4		1.50.39,14	39,07	−0,07		78.36.27,48	29,64	+2,16
23.23.57.45,4		2. 5.36,24	36,03	−0,21		77.15.31,13	31,92	+0,79
30.23.56.38,3		2.32. 4,84	4,66	−0,18		75. 2. 2,25	4,00	+1,75
May 1.23.56.30,7		2.35.53,74	53,69	−0,05		74.43.56,19	56,69	+0,50
2.23.56.23,7		2.39.43,32	43,25	−0,07		74.26. 3,24	4,39	+1,15
3.23.56.17,4		2.43.33,55	33,35	−0,20		74. 8.26,11	27,78	+1,67
10.23.55.46,9		3.10.39,48	39,31	−0,17		72.12.48,32	49,65	+1,33
15.23.55.42,8		3.30.17,48	17,61	+0,13		70.59. 2,86	2,73	−0,13
19.23.55.49,8		3.46.10,81	10,63	−0,18		70. 5.44,94	44,91	−0,03
21.23.55.56,5	II.	3.54.10,63	10,56	−0,07		69.41. 4,98	6,39	+1,41
25.23.56.16,8		4.10.17,20	17,02	−0,18		68.56. 0,06	0,67	+0,61
June 2.23.57.20,3		4.42.53,29	52,98	−0,31		67.43.26,38	26,62	+0,24
7.23.58.12,1		5. 3.28,05	27,74	−0,31		67.10.36,52	36,69	+0,17
8.23.58.23,2		5. 7.35,72	35,55	−0,17		67. 5.13,52	14,18	+0,66
14.23.59.35,2		5.32.27,31	27,11	−0,20		66.41.26,97	28,74	+1,77
15.23.59.47,7		5.36.36,36	36,31	−0,05		66.38.56,39	56,93	+0,54
17. 0. 0. 0,7		5.40.45,90	45,63	−0,27		66.36.48,38	49,83	+1,45
21. 0. 0.52,5		5.57.24,16	23,73	−0,43		66.32.28,05	29,20	+1,15
22. 0. 1. 5,2		6. 1.33,42	33,33	−0,09		66.32.24,78	26,21	+1,43
27. 0. 2. 9,4		6.22.20,62	20,60	−0,02		66.38.23,44	22,96	−0,48
28. 0. 2.22,0		6.26.29,83	29,70	−0,13	N.	66.40.49,18	48,55	−0,63
July 8. 0. 4.13,4		7. 7.47,08	46,77	−0,31		67.27.17,80	17,99	+0,19
15. 0. 5. 8,8		7.36.18,56	18,46	−0,10		68.23. 6,60	7,45	+0,85
17. 0. 5.20,6		7.44.23,43	23,35	−0,08		68.42.24,61	26,63	+2,02
20. 0. 5.34,5		7.56.27,02	26,95	−0,07		69.14. 8,99	8,12	−0,87
27. 0. 5.47,9		8.24.16,41	16,25	−0,16		70.40. 8,36	10,58	+2,22
28. 0. 5.47,4		8.28.12,46	12,38	−0,08		70.53.46,26	47,07	+0,81
Aug. 1. 0. 5.39,7	I.	8.43.51,00	50,85	−0,15				
4. 0. 5.27,4		8.55.28,31	28,17	−0,14		72.37.35,17	35,64	+0,47
5. 0. 5.22,0		8.59.19,41	19,36	−0,05		72.53.33,97	35,03	+1,06
8. 0. 5. 2,4		9.10.49,41	49,27	−0,14		73.43.10,61	11,72	+1,11
11. 0. 4.37,3		9.22.13,91	13,84	−0,07		74.35. 9,70	9,61	−0,09
12. 0. 4.27,9		9.26. 1,05	0,89	−0,16		74.52.59,12	59,00	−0,12
14. 0. 4. 7,1		9.33.33,34	33,34	0,00		75.29.21,87	21,10	−0,77

Greenwich Mean Solar Time: of Transit of Center.	Limb Observed.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	Limb Observed.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.		h. m. s.	s.	s.		° ′ ″	″	″
Aug. 17 . 0 . 3 . 32,2		9 . 44 . 48,05	48,04	− 0,01		76 . 25 . 39,07	38,39	− 0,68
18 . 0 . 3 . 19,7		9 . 48 . 32,00	31,95	− 0,05		76 . 44 . 50,65	50,68	+ 0,03
19 . 0 . 3 . 6,7		9 . 52 . 15,50	15,36	− 0,14		77 . 4 . 14,08	15,78	+ 1,70
21 . 0 . 2 . 39,0		9 . 59 . 40,90	40,77	− 0,13		77 . 43 . 43,84	42,77	− 1,07
23 . 0 . 2 . 9,7		10 . 7 . 4,57	4,36	− 0,21		78 . 23 . 56,61	56,77	+ 0,16
26 . 0 . 1 . 22,1		10 . 18 . 6,56	6,52	− 0,04		79 . 25 . 41,12	40,06	− 1,06
30 . 0 . 0 . 13,4		10 . 32 . 43,88	43,81	− 0,07		80 . 50 . 17,27	16,65	− 0,62
Sept. 1 . 23 . 59 . 18,0		10 . 43 . 37,99	38,05	+ 0,06		81 . 55 . 16,65	16,44	− 0,21
3 . 23 . 58 . 39,8		10 . 55 . 52,75	52,66	− 0,09		82 39 . 15,79	15,44	− 0,35
4 . 23 . 58 . 20,0		10 . 54 . 29,46	29,55	+ 0,09		83 . 1 . 26,06	25,74	− 0,32
5 . 23 . 58 . 0,3		10 . 58 . 6,22	6,19	− 0,03		83 . 23 . 43,65	42,73	− 0,92
6 . 23 . 57 . 40,1		11 . 1 . 42,54	42,61	+ 0,07		83 . 46 . 6,81	6,33	− 0,48
7 . 23 . 57 . 19,9		11 . 5 . 18,85	18,82	− 0,03		84 . 8 . 36,78	36,03	− 0,75
8 . 23 . 56 . 59,4		11 . 8 . 54,88	54,85	− 0,03		84 . 31 . 10,77	11,53	+ 0,76
10 . 23 . 56 . 18,0		11 . 16 . 6,48	6,44	− 0,04		85 . 16 . 39,12	39,23	+ 0,11
12 . 23 . 55 . 36,1		11 . 23 . 17,56	17,58	+ 0,02		86 . 2 . 27,31	26,72	− 0,59
14 . 23 . 54 . 54,2		11 . 30 . 28,66	28,45	− 0,21		86 . 48 . 31,84	31,52	− 0,32
15 . 23 . 54 . 33,0		11 . 34 . 3,88	3,82	− 0,06		87 . 11 . 40,97	39,62	− 1,35
17 . 23 . 53 . 50,9		11 . 41 . 14,79	14,58	− 0,21		87 . 58 . 5,09	5,52	+ 0,43
19 . 23 . 53 . 8,5		11 . 48 . 25,45	25,46	+ 0,01		88 . 44 . 41,08	42,12	+ 1,04
20 . 23 . 52 . 47,6		11 . 52 . 0,98	1,01	+ 0,03		89 . 8 . 3,62	3,52	− 0,10
21 . 23 . 52 . 26,8		11 . 55 . 36,69	36,63	− 0,06		89 . 31 . 26,75	26,52	− 0,23
25 . 23 . 51 . 4,5		12 . 10 . 0,42	0,34	− 0,08		91 . 5 . 8,11	7,02	− 1,09
26 . 23 . 50 . 44,4		12 . 13 . 36,79	36,65	− 0,14		91 . 28 . 34,83	32,42	− 2,41
27 . 23 . 50 . 24,4		12 . 17 . 13,28	13,14	− 0,14		91 . 51 . 59,37	57,22	− 2,15
28 . 23 . 50 . 4,7		12 . 20 . 50,05	49,85	− 0,20		92 . 15 . 22,80	21,12	− 1,68
Oct. 1 . 23 . 49 . 6,5		12 . 31 . 41,40	41,41	+ 0,01		93 . 25 . 23,07	23,42	+ 0,35
6 . 23 . 47 . 36,1	I.	12 . 48 . 53,49	53,32	− 0,17	N.	95 . 21 . 13,80	15,22	+ 1,42
9 . 23 . 47 . 42,3		13 . 0 . 53,25	53,05	− 0,20		96 . 29 . 59,91	0,23	+ 0,32
12 . 23 . 46 . 0,5		13 . 11 . 56,97	56,99	+ 0,02		97 . 37 . 58,94	59,13	+ 0,19
13 . 23 . 45 . 46,3		13 . 15 . 39,30	39,34	+ 0,04		98 . 0 . 26,30	26,83	+ 0,53
15 . 23 . 45 . 19,7		13 . 23 . 5,72	5,71	− 0,01		98 . 45 . 2,27	2,14	− 0,13
17 . 23 . 44 . 55,5		13 . 30 . 34,52	34,47	− 0,05		99 . 29 . 6,58	7,94	+ 1,36
18 . 23 . 44 . 44,4		13 . 34 . 19,91	19,76	− 0,15		99 . 50 . 57,93	58,85	+ 0,92
19 . 23 . 44 . 33,6		13 . 38 . 5,66	5,71	+ 0,05		100 . 12 . 41,97	41,15	− 0,82
20 . 23 . 44 . 23,8		13 . 41 . 52,44	52,29	− 0,15		100 . 34 . 12,89	14,55	+ 1,66
26 . 23 . 43 . 38,4		14 . 4 . 46,26	46,19	− 0,07		102 . 40 . 3,27	2,77	− 0,50
Nov. 2 . 23 . 43 . 18,4		14 . 32 . 2,50	2,38	− 0,12		104 . 57 . 42,52	42,99	+ 0,47
3 . 23 . 43 . 19,2		14 . 35 . 59,37	59,23	− 0,14		105 . 16 . 28,56	27,50	− 1,06
8 . 23 . 43 . 33,1		14 . 55 . 56,07	55,88	− 0,19		106 . 46 . 14,81	16,32	+ 1,51
10 . 23 . 43 . 44,4		15 . 4 . 0,57	0,48	− 0,09		107 . 20 . 15,66	15,43	− 0,23
12 . 23 . 43 . 59,4		15 . 12 . 8,66	8,56	− 0,10		107 . 53 . 3,58	3,34	− 0,24
15 . 23 . 44 . 28,3		15 . 24 . 27,33	27,18	− 0,15		108 . 39 . 53,89	54,36	+ 0,47
17 . 23 . 44 . 51,9		15 . 32 . 44,17	43,92	− 0,25		109 . 9 . 29,51	29,87	+ 0,36
19 . 23 . 45 . 19,0		15 . 41 . 4,39	4,04	− 0,35		109 . 37 . 42,19	42,98	+ 0,79
22 . 23 . 46 . 5,6		15 . 53 . 40,80	40,38	− 0,42		110 . 17 . 22,04	21,30	− 0,74
26 . 23 . 47 . 18,2		16 . 10 . 39,86	39,68	− 0,18		111 . 4 . 55,65	55,92	+ 0,27
27 . 23 . 47 . 38,3		16 . 14 . 56,55	56,33	− 0,22		111 . 15 . 50,44	50,73	+ 0,29
28 . 23 . 47 . 59,1		16 . 19 . 14,00	13,66	− 0,34		111 . 26 . 21,01	21,44	+ 0,43
Dec. 1 . 23 . 49 . 5,1		16 . 32 . 9,77	9,61	− 0,16		111 . 55 . 26,24	25,76	− 0,48
5 . 23 . 50 . 41,8		16 . 49 . 32,99	32,72	− 0,27				
7 . 23 . 51 . 33,4		16 . 58 . 17,91	17,54	− 0,37	N.	112 . 42 . 4,46	4,50	+ 0,04
10 . 23 . 52 . 54,4		17 . 11 . 28,80	28,37	− 0,43	S.	112 . 59 . 24,98	25,82	+ 0,84
11 . 23 . 53 . 22,0		17 . 15 . 53,04	52,83	− 0,21	S.	113 . 4 . 20,21	18,63	− 1,58
13 . 23 . 54 . 18,9		17 . 24 . 43,16	42,87	− 0,29		113 . 12 . 40,89	41,44	+ 0,55
14 . 23 . 54 . 47,8		17 . 29 . 8,69	8,39	− 0,30		113 . 16 . 9,83	11,25	+ 1,42
21 . 23 . 58 . 16,0		18 . 0 . 13,39	12,95	− 0,44		113 . 27 . 33,22	33,20	− 0,02
22 . 23 . 58 . 46,2		18 . 4 . 40,21	39,71	− 0,50				

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON.

Greenwich Mean Solar Time of Transit of Center.	Limb Observed.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	Limb Observed.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.		h. m. s.	s.	s.		° ′ ″	″	″
Jan. 5. 3.40.54,4	I.	22.39.37,27	37,11	−0,16	S.	93.36.57,91	59,44	+1,53
7. 5. 1.21,6	I.	0. 8.10,77	10,58	−0,19	S.	83.23.42,90	46,98	+4,08
12. 8.55.37,4	I.	4.22.47,85	48,29	+0,44	S.	65.27.13,87	15,47	+1,60
16.12.45.17,1	II.	8.28.51,98	53,05	+1,07	S.	73. 7.53,10	56,35	+3,25
17.13.39.38,9	II.	9.27.19,17	20,17	+1,00	S.	78.28.32,03	35,43	+3,40
Feb. 10. 8.32.55,8	I.	5.54.22,65	23,24	+0,59	S.	65.26.58,46	64,02	+5,56
13.11.23.40,4	I.	8.57.25,01	25,67	+0,66	N.	75.35.29,71	35,02	+5,31
14.12.18. 5,3	II.	9.55.55,92	56,75	+0,83	S.	81.25.16,94	19,12	+2,18
15.13.11.15,4	II.	10.53.11,08	12,05	+0,97	S.	87.50.37,79	39,36	+1,57
Mar. 7. 4.35.36,9	I.	3.34.58,69	58,42	−0,27	S.	67.13.59,87	60,02	+0,15
8. 5.26.51,9	I.	4.30.18,61	18,73	+0,12	S.	65.38.47,64	48,46	+0,82
17.13.36.53,2	II.	13.17. 9,70	10,33	+0,63	S.	103.23.20,76	20,62	−0,14
24.20. 5.52,7	II.	20.14.48,95	48,30	−0,65				
Apr. 5. 4.14.29,8	I.	5. 8. 7,95	8,06	+0,11	S.	65.33.12,97	15,27	+2,30
12.10.24. 9,1	I.	11.46.24,02	24,43	+0,41	N.	93.57.51,30	57,01	+5,71
20.18. 1. 9,0	II.	19.56.11,72	11,77	+0,05	N.	108.45.56,02	54,60	−1,42
May 1. 1.19.19,0	I.	3.54.58,98	58,69	−0,29				
2. 2.11. 2,9	I.	4.50.47,88	48,07	+0,19				
3. 3. 4. 5,3	I.	5.47.55,61	55,88	+0,27				
5. 4.50. 0,4	I.	7.42. 1,03	1,33	+0,30	N.	70.27.22,69	26,90	+4,21
10. 9. 3.57,2	I.	12.16.22,45	22,75	+0,30	N.	97.22. 6,76	10,98	+4,22
13.11.55.20,4	I.	15.20. 3,38	3,98	+0,60	S.	111.47.36,99	40,35	+3,36
	II.	15.20. 3,20	3,98	+0,78				
June 5. 6. 7.19,0	I.	11. 1.45,75	46,23	+0,48	N.	89.15. 1,55	4,44	+2,89
6. 6.56.53,7	I.	11.55.25,10	25,40	+0,30	N.	95.13.59,87	60,38	+0,51
10.10.39.20,7	I.	15.54.14,93	15,40	+0,47	S.& N.	113. 5.33,56	31,58	−1,98
20.18.50.55,3	II.	0.46.36,17	36,53	+0,36	N.	79.23.34,04	36,96	+2,92
22.20.18.52,1	II.	2.22.40,50	40,62	+0,12	N.	71.20.56,72	60,81	+4,09
July 8. 9.27.39,8	I.	16.32.45,88	46,34	+0,46	N.	113.57.29,68	24,50	−5,18
19.18.12.15,5	II.	2. 2.10,14	10,37	+0,23	N.	72.50.50,18	53,98	+3,80
Aug. 1. 4.33.32,8	I.	13.12.27,93	28,76	+0,83	N.	102.57. 2,73	8,20	+5,47
5. 8.19.23,0	I.	17.14.41,46	42,01	+0,55	N.	114. 8. 8,86	7,54	−1,32
7.10.11.14,4	I.	19.14.44,30	44,78	+0,48	S.	110.56.10,46	7,06	−3,40
8.11. 2.42,5	I.	20.10.17,43	17,78	+0,35				
10.12.36. 4,1	II.	21.51.47,76	48,38	+0,62	N.	98.27.57,10	52,37	−4,73
11.13.19. 7,9	II.	22.38.55,24	55,77	+0,53	N.	93.24.36,10	32,12	−3,98
18.18.29. 8,7	II.	4.17.22,84	22,83	−0,01	N.	66.30.15,40	17,64	+2,24
20.20.15. 6,3	II.	6.11.30,92	31,20	+0,28				
31. 5.16.21,1	I.	15.53.39,88	40,58	+0,70	N.	112.47. 1,01	56,21	−4,80
Sept. 1. 6.14.46,0	I.	16.56.10,71	10,98	+0,27	N.	113.54.58,06	53,37	−4,69
2. 7.12. 4,0	I.	17.57.34,86	34,99	+0,13	S.	113.29.18,66	19,35	+0,69
4. 8.58.43,1	I.	19.52.24,62	24,62	−0,00	S.	108.57.35,40	34,75	−0,65
5. 9.47.11,9	I.	20.44.57,95	58,01	+0,06	S.	104.42.41,19	39,99	−1,20
6.10.32.47,5	I.	21.34.37,62	37,96	+0,34	S.	100.10.39,55	38,27	−1,28
7.11.16.10,7	I.	22.22. 4,42	4,86	+0,44	S.	95.16.38,33	38,21	−0,12
9.12.39.31,5	II.	23.53.32,39	33,15	+0,76	N.	85.14.55,15	50,90	−4,25
17.18.56.53,7	II.	6.43.28,96	29,59	+0,63				
28. 4. 6.51,4	I.	16.34.22,20	23,71	+1,51				
29. 5. 6. 6,1	I.	17.37.43,24	44,08	+0,84				
Oct. 2. 7.45. 9,6	I.	20.29. 2,34	2,40	+0,06	S.	105.47.30,20	30,54	+0,34
4. 9.14.56,3	I.	22. 6.57,04	57,14	+0,10	S.	96.45.33,68	36,77	+3,09
5. 9.56.57,6	I.	22.53. 1,81	1,96	+0,15	S.	91.49.41,87	43,47	+1,60
9.12.45.19,6	II.	1.57.38,03	39,02	+0,99	N.	73.42.38,73	38,25	−0,48
17.19.21.58,9	II.	9. 6.55,08	56,04	+0,96	S.	77.31.59,64	65,02	+5,38
18.20.12.20,9	II.	10. 1.21,72	22,57	+0,85	S.	82.47.26,11	29,01	+2,90
19.21. 3.15,8	II.	10.56.21,52	22,53	+1,01				
28. 4.48.59,1	I.	19.14.53,41	54,08	+0,67	S.	110.17.34,91	33,26	−1,65

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF THE MOON, *continued.*

Greenwich Mean Solar Time of Transit of Center.	Limb Observed.	R. A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	Limb Observed.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.		h. m. s.	s.	s.		° ′ ″	″	″
Nov. 3. 9.18.29,2	I.	0. 8.47,18	47,30	+0,12	S.	83.32.19,78	22,30	+2,52
4.10. 0.14,5	I.	0.54.35,88	36,08	+0,20	S.	79. 0.54,06	54,55	+0,49
6.11.28.16,4	I.	2.30.45,31	45,76	+0,45	S. & N.	71.28.30,54	30,53	−0,01
7.12.15.16,5	II.	3.21.50,03	50,81	+0,78	N.	68.49.21,87	22,15	+0,28
8.13. 4.13,3	II.	4.14.51,49	52,08	+0,59	N.	67. 9. 2,84	1,91	−0,93
15.18.52.59,4	II.	10.32.10,78	11,49	+0,71	S.	86.12.46,56	46,86	+0,30
16.19.42.32,8	II.	11.25.48,83	49,76	+0,93				
27. 5. 8.41,7	I.	21.32.55,97	55,93	−0,04	S.	99.47. 6,62	6,58	−0,04
28. 5.52.50,1	I.	22.21. 8,16	8,27	+0,11	S.	91.54.16,24	19,26	+3,02
29. 6.35. 3,1	I.	23. 7.24,71	24,86	+0,15	S.	89.56.37,20	42,34	+5,14
Dec. 1. 7.57.56,9	I.	0.38.25,19	25,48	+0,29	S.	80.27. 6,67	11,47	+4,80
5.10.59.42,9	I.	3.56.27,24	27,49	+0,25	S.	67.35.59,71	64,17	+4,46
6.11.50. 7,7	I.	4.50.57,07	57,32	+0,25	N.	66.40. 8,41	9,54	+1,13
	II.	4.50.56,82	57,32	+0,50				
8.13.33. 7,6	II.	6.42. 7,14	7,70	+0,56	S.	68.25.40,08	35,55	−4,53

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF MARS.

Greenwich Mean Solar Time of Transit of Center.	Limb Observed.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.		h. m. s.	s.	s.	° ′ ″	″	″
June 3.12.10. 6,6		16.57.39,93	38,82	−1,11			
5.11.59.20,9					115.14.36,93	61,18	+24,25
15.11. 5.31,3		16.40.12,75	11,78	−0,97	115.20.51,19	75,20	+24,01
20.10.39.15,4		16.33.35,30	34,19	−1,11	115.20.36,08	58,80	+22,72
22.10.28.59,5		16.31.10,82	9,50	−1,32	115.20. 5,99	27,80	+21,81
26.10. 8.59,1	I.	16.26.53,37	52,07	−1,30	115.18.42,96	64,01	+21,05
28. 9.59.16,9					115.12.56,82	78,91	+22,09
July 7. 9.18.27,1	I.	16.19.35,26	34,23	−1,03	115.15.57,98	78,00	+20,02
15. 8.46.17,6	I.	16.18.52,87	52,11	−0,76	115.18.19,02	36,49	+17,47
17. 8.38.51,4	I.	16.19.18,59	17,91	−0,68	115.19.39,99	57,89	+17,90
19. 8.31.39,4	I.	16.19.58,54	57,84	−0,70	115.21.21,83	38,58	+16,75
21. 8.24.41,2	I.	16.20.52,28	51,74	−0,54	115.23.21,01	38,28	+17,27
Aug. 1. 7.50.19,6	I.	16.29.47,15	46,25	−0,90	115.39.19,22	35,97	+16,75
2. 7.47.30,8	I.	16.30.54,50	53,64	−0,86	115.41.10,26	23,27	+13,01
5. 7.39.21,7	I.	16.34.33,72	33,09	−0,63	115.46.43,94	58,37	+14,43
7. 7.34. 9,7	I.	16.37.14,01	13,21	−0,80	115.50.37,82	50,17	+12,35
10. 7.26.41,0	I.	16.41.33,74	33,06	−0,68	115.56.34,56	44,77	+10,21
11. 7.24.16,7	I.	16.43. 5,56	4,67	−0,89	115.58.34,32	43,47	+9,15
12. 7.21.54,5	I.	16.44.39,50	38,73	−0,77	116. 0.30,93	42,07	+11,14
14. 7.17.17,3	I.	16.47.54,72	53,99	−0,73	116. 4.28,01	37,57	+9,56
15. 7.15. 2,2	I.	16.49.35,77	35,10	−0,67	116. 6.23,44	33,77	+11,33
16. 7.12.49,5					116. 8.19,55	28,67	+9,12
17. 7.10.38,9	I.	16.53. 4,84	4,06	−0,78	116.10.11,62	21,77	+10,15
18. 7. 8.30,4	I.	16.54.52,57	51,85	−0,72	116.12. 2,20	12,97	+10,77
21. 7. 2.17,9	I.	17. 0.28,69	27,99	−0,70	116.17.20,88	31,57	+10,69
24. 6.56.23,5	I.	17. 6.23,00	22,57	−0,43	116.22.13,24	21,27	+8,03
25. 6.54.29,7	I.	17. 8.25,41	24,69	−0,72			
26. 6.52.37,3	I.	17.10.29,28	28,72	−0,56	116.25. 5,43	14,48	+9,05
29. 6.47.11,6	I.	17.16.52,37	51,81	−0,56	116.28.47,93	58,48	+10,55
Sept. 1. 6.42. 1,8	I.	17.23.31,40	30,58	−0,82	116.31.45,36	52,89	+7,53
2. 6.40.21,8	I.	17.25.47,65	46,78	−0,87	116.32.31,86	38,79	+6,93
4. 6.37. 6,2	I.	17.30.24,64	23,87	−0,77	116.33.43,93	50,39	+6,46
5. 6.35.30,7	I.	17.32.45,38	44,66	−0,72	116.34. 9,36	15,69	+6,33
6. 6.33.56,7	I.	17.35. 7,67	6,90	−0,77	116.34.26,02	33,70	+7,68

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF MARS, *continued.*

Greenwich Mean Solar Time of Transit of Center.	Limb Observed.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.		h. m. s.	s.	s.	° ′ ″	″	″
Sept. 7 . 6 . 32 . 24,1	I.	17 . 37 . 31,36	30,54	− 0,82	116 . 34 . 38,04	44,10	+ 6,06
8 . 6 . 30 . 52,7	I.	17 . 39 . 56,28	55,55	− 0,73	116 . 34 . 40,05	46,60	+ 6,55
9 . 6 . 29 . 22,6	I.	17 . 42 . 22,55	21,90	− 0,65	116 . 34 . 33,81	41,10	+ 7,29
12 . 6 . 25 . 0,3	I.	17 . 49 . 49,19	48,57	− 0,62	116 . 33 . 28,72	34,01	+ 5,29
13 . 6 . 23 . 35,6	I.	17 . 52 . 20,75	19,91	− 0,84	116 . 32 . 48,49	53,81	+ 5,32
15 . 6 . 20 . 49,1	I.	17 . 57 . 26,90	26,10	− 0,80	116 . 31 . 1,51	5,92	+ 4,41
16 . 6 . 19 . 27,4	I.	18 . 0 . 1,57	0,90	− 0,67	116 . 29 . 52,66	57,72	+ 5,06
22 . 6 . 11 . 40,2	I.	18 . 15 . 52,37	51,75	− 0,62	116 . 19 . 30,01	35,44	+ 5,43
23 . 6 . 10 . 25,8	I.	18 . 19 . 34,36	33,65	− 0,71	116 . 12 . 12,02	14,64	+ 2,62
26 . 6 . 6 . 47,7	I.	18 . 26 . 45,31	44,62	− 0,69	116 . 8 . 59,84	65,45	+ 5,61
27 . 6 . 5 . 36,7					116 . 5 . 54,77	59,65	+ 4,88
28 . 6 . 4 . 26,4	I.	18 . 32 . 16,70	16,03	− 0,67	116 . 2 . 37,49	42,36	+ 4,87
29 . 6 . 3 . 16,9	I.	18 . 35 . 3,55	2,86	− 0,69	115 . 59 . 7,37	13,26	+ 5,89
Oct. 6 . 5 . 55 . 28,1	I.	18 . 54 . 49,37	48,70	− 0,67	115 . 29 . 12,57	15,18	+ 2,61
13 . 5 . 48 . 3,4	I.	19 . 14 . 59,29	58,64	− 0,65	114 . 49 . 10,35	14,11	+ 3,76
16 . 5 . 44 . 58,1	I.	19 . 23 . 43,16	42,44	− 0,72	114 . 28 . 52,38	56,42	+ 4,04
18 . 5 . 42 . 56,0	I.	19 . 29 . 33,85	32,98	− 0,87	114 . 14 . 16,13	21,12	+ 4,99
19 . 5 . 41 . 55,4	I.	19 . 32 . 29,58	28,60	− 0,98	114 . 6 . 41,80	44,43	+ 2,63
28 . 5 . 32 . 55,4	I.	19 . 58 . 57,18	56,40	− 0,78	112 . 48 . 42,86	45,76	+ 2,90
Nov. 3 . 5 . 26 . 57,9	I.	20 . 16 . 38,02	37,12	− 0,90	111 . 47 . 27,57	32,28	+ 4,71
4 . 5 . 25 . 58,3	I.	20 . 19 . 34,74	33,70	− 1,04	111 . 36 . 36,55	38,48	+ 1,93
8 . 5 . 21 . 57,6	I.	20 . 31 . 19,65	18,88	− 0,77	110 . 51 . 3,34	8,69	+ 5,35
9 . 5 . 20 . 57,2	I.	20 . 34 . 15,67	14,82	− 0,85	110 . 39 . 14,95	18,00	+ 3,05
11 . 5 . 18 . 55,9	I.	20 . 38 . 7,07	6,21	− 0,86	110 . 15 . 0,61	3,60	+ 2,99
16 . 5 . 13 . 49,4	I.	20 . 54 . 42,52	41,50	− 1,02	109 . 11 . 16,01	19,52	+ 3,51
18 . 5 . 11 . 45,3	I.	21 . 0 . 31,21	30,23	− 0,98	108 . 44 . 34,07	37,12	+ 3,05
20 . 5 . 9 . 40,3	I.	21 . 6 . 19,02	18,09	− 0,93	108 . 17 . 15,50	14,83	− 0,67
28 . 5 . 1 . 11,1	I.	21 . 29 . 20,87	19,84	− 1,03	106 . 21 . 28,53	31,25	+ 2,72
29 . 5 . 0 . 6,2	I.	21 . 32 . 12,37	11,35	− 1,02	106 . 6 . 20,40	23,95	+ 3,55
Dec. 8 . 4 . 50 . 9,2	I.	21 . 57 . 42,73	41,74	− 0,99	103 . 44 . 29,50	33,17	+ 3,67

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF VESTA.

Greenwich Mean Solar Time of Transit of Center.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.	h. m. s.	s.	s.	° ′ ″	″	″
Jan. 30 . 13 . 13 . 11,9	9 . 52 . 2,86	4,24	+ 1,38	69 . 49 . 9,13	26,63	+ 17,50
Feb. 2 . 12 . 58 . 41,8	9 . 49 . 20,03	21,43	+ 1,40	69 . 24 . 23,45	42,33	+ 18,88
3 . 12 . 53 . 49,8	9 . 48 . 23,86	25,34	+ 1,48	69 . 16 . 13,81	29,83	+ 16,02
14 . 11 . 59 . 45,3	9 . 37 . 32,50	33,91	+ 1,41	67 . 50 . 25,27	40,62	+ 15,35
22 . 11 . 20 . 26,6	9 . 29 . 39,85	41,45	+ 1,60	66 . 57 . 20,04	36,70	+ 16,66
Mar. 1 . 10 . 46 . 40,7	9 . 23 . 24,24	25,70	+ 1,46	66 . 20 . 21,25	34,78	+ 13,53
2 . 10 . 41 . 55,7	9 . 22 . 35,04	36,52	+ 1,48	66 . 15 . 52,40	65,77	+ 13,37
3 . 10 . 37 . 12,1	9 . 21 . 47,22	48,67	+ 1,45	66 . 11 . 36,45	49,27	+ 12,82
4 . 10 . 32 . 30,0	9 . 21 . 0,83	2,20	+ 1,37	66 . 7 . 32,71	45,46	+ 12,75
7 . 10 . 18 . 32,0	9 . 18 . 50,27	51,68	+ 1,41	65 . 56 . 38,39	50,35	+ 11,96

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF JUNO.

Greenwich Mean Solar Time of Transit of Center.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
d. h. m. s.	h. m. s.	s.	s.	° ′ ″	″	″
July 21 . 13 . 47 . 6,5	21 . 44 . 10,58	12,83	+ 2,25	91 . 22 . 13,61	41,54	− 32,07
24 . 13 . 33 . 40,1	21 . 42 . 31,62	33,82	+ 2,20	91 . 35 . 2,38	29,12	− 33,26
Aug. 1 . 12 . 57 . 1,5	21 . 37 . 19,48	21,90	+ 2,42	92 . 18 . 53,11	19,10	− 34,01
2 . 12 . 52 . 22,5	21 . 36 . 36,24	38,71	+ 2,47	92 . 25 . 20,68	45,39	− 35,29
7 . 12 . 28 . 56,9	21 . 32 . 49,57	52,03	+ 2,46	93 . 0 . 28,75	54,58	− 34,17
10 . 12 . 14 . 46,7	21 . 30 . 26,68	29,23	+ 2,55	93 . 23 . 47,54	13,07	− 34,47
11 . 12 . 10 . 2,5	21 . 29 . 38,30	40,81	+ 2,51	93 . 31 . 53,87	19,57	− 34,30
12 . 12 . 5 . 17,9	21 . 28 . 49,50	52,08	+ 2,58	93 . 40 . 9,68	35,66	− 34,02
14 . 11 . 55 . 48,2	21 . 27 . 11,34	13,90	+ 2,56	93 . 57 . 9,71	35,26	− 34,45
16 . 11 . 46 . 17,7	21 . 25 . 32,43	35,12	+ 2,69	94 . 14 . 42,60	8,85	− 33,75
17 . 11 . 41 . 32,7	21 . 24 . 43,12	45,68	+ 2,56	94 . 23 . 42,21	7,35	− 34,86
18 . 11 . 36 . 47,6	21 . 23 . 53,79	56,30	+ 2,51	94 . 32 . 47,16	13,15	− 34,01
19 . 11 . 32 . 2,5	21 . 23 . 4,54	7,02	+ 2,48	94 . 41 . 59,26	25,65	− 33,61
21 . 11 . 22 . 33,0				95 . 0 . 42,91	9,25	− 33,66
24 . 11 . 8 . 21,2	21 . 19 . 2,05	4,65	+ 2,60	95 . 29 . 27,07	53,04	− 34,03
26 . 10 . 58 . 55,8	21 . 17 . 28,25	30,80	+ 2,55	95 . 48 . 54,16	21,94	− 32,22
Sept. 1 . 10 . 30 . 56,8	21 . 13 . 4,00	6,60	+ 2,60	96 . 48 . 8,90	37,64	− 31,26
2 . 10 . 26 . 20,3	21 . 12 . 23,28	25,72	+ 2,44	96 . 58 . 2,37	32,04	− 30,33
4 . 10 . 17 . 10,3	21 . 11 . 4,90	7,17	+ 2,27	97 . 17 . 48,70	17,84	− 30,86
5 . 10 . 12 . 36,6	21 . 10 . 26,96	29,58	+ 2,62	97 . 27 . 39,39	8,44	− 30,95
6 . 10 . 8 . 4,3	21 . 9 . 50,51	53,19	+ 2,68	97 . 37 . 28,50	56,84	− 31,66
7 . 10 . 3 . 33,4				97 . 47 . 12,27	42,54	− 29,73
9 . 9 . 54 . 35,4	21 . 8 . 9,01	11,56	+ 2,55	98 . 6 . 32,81	4,64	− 28,17
11 . 9 . 45 . 42,8				98 . 25 . 41,56	11,45	− 30,11
12 . 9 . 41 . 18,5				98 . 35 . 6,74	38,15	− 28,59
13 . 9 . 36 . 55,9	21 . 6 . 12,80	15,12	+ 2,32	98 . 44 . 29,36	59,85	− 29,51
16 . 9 . 23 . 56,4	21 . 5 . 0,87			99 . 11 . 59,47		
20 . 9 . 6 . 59,5				99 . 47 . 8,93		
22 . 8 . 58 . 41,1	21 . 3 . 20,70			100 . 4 . 0,85		
23 . 8 . 54 . 34,4	21 . 3 . 9,85			100 . 12 . 14,56		
26 . 8 . 42 . 24,6	21 . 2 . 47,79					
27 . 8 . 38 . 25,0	21 . 2 . 44,09			100 . 43 . 42,98		
Oct. 13 . 7 . 38 . 29,2	21 . 5 . 43,27			102 . 23 . 55,55		
16 . 7 . 28 . 3,6	21 . 7 . 5,60			102 . 37 . 50,78		
18 . 7 . 21 . 18,0				102 . 46 . 10,83		
19 . 7 . 17 . 57,5				102 . 50 . 8,30		

RIGHT ASCENSIONS AND NORTH POLAR DISTANCES OF CERES.

Greenwich Mean Solar Time of Transit of Center.	R.A. of Center from Observation.	Seconds of Tabular R.A.	Excess of Tabular R.A.	N.P.D. of Center from Observation.	Seconds of Tabular N.P.D.	Excess of Tabular N.P.D.
Jan. 2 . 14 . 0 . 1,7	8 . 48 . 36,74	40,04	+ 3,30	61 . 47 . 6,90	34,13	+ 27,23
4 . 13 . 50 . 50,6	8 . 47 . 17,29	20,60	+ 3,31	61 . 31 . 2,48	30,33	+ 27,85
10 . 13 . 22 . 43,3	8 . 42 . 44,75	48,18	+ 3,43	60 . 43 . 0,55	28,43	+ 27,88
11 . 13 . 17 . 57,8	8 . 41 . 54,99	58,34	+ 3,35	60 . 35 . 9,01	34,93	+ 25,92
16 . 12 . 53 . 54,1	8 . 37 . 30,13	33,73	+ 3,60	59 . 56 . 40,73	7,02	+ 26,29
17 . 12 . 49 . 2,7	8 . 36 . 34,47	38,16	+ 3,69	59 . 49 . 13,94	40,92	+ 26,98
18 . 12 . 44 . 10,8	8 . 35 . 38,37	41,88	+ 3,51	59 . 41 . 54,96	21,02	+ 26,06
24 . 12 . 14 . 47,4	8 . 29 . 49,46	53,23	+ 3,77	59 . 0 . 32,59	58,01	+ 25,42
28 . 11 . 55 . 7,7	8 . 25 . 52,76	56,33	+ 3,57	58 . 35 . 57,08	22,69	+ 25,61
30 . 11 . 45 . 18,4	8 . 23 . 54,92	58,61	+ 3,69	58 . 24 . 42,72	7,79	+ 25,07
Feb. 2 . 11 . 30 . 37,5	8 . 21 . 1,26	4,91	+ 3,65	58 . 9 . 15,59	39,98	+ 24,39
3 . 11 . 25 . 45,0	8 . 20 . 4,53	8,12	+ 3,59	58 . 4 . 32,54	54,18	+ 21,64
13 . 10 . 37 . 49,7	8 . 11 . 26,95	30,55	+ 3,60	57 . 28 . 2,42	24,74	+ 22,32
14 . 10 . 33 . 8,7	8 . 10 . 41,72	45,31	+ 3,59	57 . 25 . 31,71	52,84	+ 21,13

DETERMINATION OF THE POSITION OF THE ECLIPTIC, AND OF THE MEAN ERROR OF THE ASSUMED RIGHT ASCENSIONS OF THE FUNDAMENTAL STARS, FROM THE CIRCLE OBSERVATIONS OF THE SUN IN THE YEAR 1843.

The Observations have been divided into twelve groups, which, by the rejection of all observations of single limbs except those of Dec. 5 and Dec. 8, which are reckoned as one observation, are made to contain alternately ten and nine observations. The table below exhibits the means of the days of observation, and the mean values (a) of the Tabular Errors in North Polar Distance, of the several groups, derived from the columns in pages 182 and 183, together with the Sun's longitude (λ) and North Polar Distance (Δ) at the mean noons of the respective days.

Limiting Days of Observation of each group.	Mean Day.	Mean of the Tabular Errors in N.P.D.	Number of Obser-vations.	Sun's Longitude at mean Noon of mean Day.	Sun's N.P.D. at mean Noon of mean Day.
Jan. 2......Feb. 13	Jan. 24	+0,98″	10	303° . 55′ . 8″	109° . 17′ . 28″
Feb. 17......Mar. 23	Mar. 13	+0,81	9	352 . 17 . 38	93 . 3 . 37
Mar. 24......Apr. 19	Apr. 6	+1,67	10	16 . 2 . 41	83 . 40 . 58
Apr. 20......May 20	May 5	+1,02	9	44 . 19 . 4	73 . 51 . 4
May 22......June 22	June 10	+0,94	10	78 . 54 . 16	67 . 0 . 15
June 27......Aug. 5	July 20	+0,70	9	117 . 3 . 22	69 . 14 . 5
Aug. 8......Aug. 26	Aug. 17	−0,08	10	143 . 52 . 38	76 . 25 . 36
Aug. 30......Sept. 11	Sept. 6	−0,31	9	163 . 12 . 30	83 . 23 . 45
Sept. 13......Sept. 28	Sept. 21	−0,68	10	177 . 49 . 46	89 . 8 . 10
Sept. 29......Oct. 20	Oct. 12	+0,12	9	198 . 30 . 34	97 . 15 . 38
Oct. 21......Nov. 20	Nov. 8	+0,32	10	225 . 27 . 36	106 . 29 . 3
Nov. 23......Dec. 22	Dec. 6	+0,26	9	253 . 46 . 8	112 . 28 . 19

Formulæ of Calculation.

$$a + m \cos\lambda \operatorname{cosec}\Delta + n \sin\lambda \operatorname{cosec}\Delta + p = 0\ldots\ldots(1).$$

And I being the obliquity of the Ecliptic,

$$\delta\lambda = m \times \operatorname{cosec} I\ldots(2). \qquad \delta I = n \times \sec I\ldots(3). \qquad \delta\Delta = a + p\ldots(4).$$

The following equations were deduced from the formula (1) by means of the Table above. Each equation is multiplied by the respective number of observations.

First Quarter
- Jan. 24...... $+ 9{,}80'' + m \times 5{,}9121 - n \times 8{,}7919 + 10p = 0.$
- Mar. 13...... $+ 7{,}29 + m \times 8{,}9315 - n \times 1{,}2085 + 9p = 0.$
- Apr. 6...... $+ 16{,}70 + m \times 9{,}6692 + n \times 2{,}7808 + 10p = 0.$

Second Quarter
- May 5...... $+ 9{,}18 + m \times 6{,}7038 + n \times 6{,}5460 + 9p = 0.$
- June 10...... $+ 9{,}40 + m \times 2{,}0906 + n \times 10{,}6600 + 10p = 0.$
- July 20...... $+ 6{,}30 - m \times 4{,}3782 + n \times 8{,}5719 + 9p = 0.$

Third Quarter
- Aug. 17...... $- 0{,}80 - m \times 8{,}3096 + n \times 6{,}0646 + 10p = 0.$
- Sept. 6...... $- 2{,}79 - m \times 8{,}6738 + n \times 2{,}6174 + 9p = 0.$
- Sept. 21...... $- 6{,}80 - m \times 9{,}9939 + n \times 0{,}3788 + 10p = 0.$

Fourth Quarter
- Oct. 12...... $+ 1{,}08 - m \times 8{,}6034 - n \times 2{,}8802 + 9p = 0.$
- Nov. 8...... $+ 3{,}20 - m \times 7{,}3147 - n \times 7{,}4331 + 10p = 0.$
- Dec. 6...... $+ 2{,}34 - m \times 2{,}7223 - n \times 9{,}3513 + 9p = 0.$

From the above, new equations are formed by adding and subtracting as indicated below:

First Quarter + Second + Third + Fourth

$$+ 54'',90 - 16,6887m + 7,9545n + 114p = 0.$$

First Quarter + Second − Third − Fourth

$$+ 62'',44 + 74,5467m + 29,1621n = 0.$$

First Quarter − Second − Third + Fourth

$$+ 28'',92 + 28,4335m - 61,7229n = 0.$$

The solution of these equations gives,

$$m = - 0'',849; \qquad n = + 0'',029; \qquad p = - 0'',608.$$

By equation (2), $\delta\lambda = - 0'',849 \times \text{cosec } 23^0 . 28' = - 2'',132$. Consequently the Sun's longitude as calculated in the Nautical Almanac for 1843, is *less* than the longitude found by observation, by the mean quantity $2'',132$.

Hence the mean excess of the Tabular above the observed Right Ascension is $- 0^s,140$.

By equation (3), $\delta I = + 0'',029 \times \sec 23^0 . 28' = + 0'',032$. Hence the obliquity assumed in the Nautical Almanac is *greater* than that given by observation by $0'',032$.

The value of p shews that within the Tropics, the North Polar Distances, determined by the Circle observations and calculations contained in this Volume, should be *increased* by the mean quantity $0'',608$. Hence as the mean of the Tabular errors of N.P.D. given in pages 182 and 183, is $+ 0'',480$, the mean excess of the Tabular above the true N.P.D. is $+ 0'',480 - 0'',608 = - 0'',128$.

The mean of 116 Tabular errors in R.A. given in pages 182 and 183, (excluding observations of single limbs) is $- 0^s,146$.

Hence the assumed R.A. of the fundamental stars are *too great* by $- 0^s,140 + 0^s,146$, that is, by $0^s,006$.

OCCULTATIONS

OF

FIXED STARS BY THE MOON,

WITH

THE EQUATIONS GIVEN BY THE CALCULATION
OF THE OCCULTATIONS.

1843.

Comparisons of Clocks and Chronometers used in the Calculation of the following Occultations.

*** The letter *H* is an abbreviation for Hardy, the Transit Clock; *G* for Graham, the Clock in the Dome, commonly used with the Five-feet Equatoreal. *U* and *X* are Sidereal Chronometers, and *W* a Solar Chronometer, each beating half-seconds.

Day of Comparison.	Clock.	Clock Time.	Chron.	Chronometer Time.
1843.		h. m. s.		h. m. s.
April 10	G.	13.40.55	U.	13.40.25,1
	H.	13.41.46	U.	13.42.24,8
May 3	G.	11.53.44	U.	11.52. 9,0
	H.	11.51.32	U.	11.54.15,6
	G.	12.41.15	U.	12.39.40,1
	H.	12.39.48	U.	12.42.31,8
June 3	H.	13.41.40	U.	13.42.34,5
	G.	13.48.24	U.	13.44.16,0
	H.	14.30.41	U.	14.31.35,5
	G.	14.36.57	U.	14.32.49,0
Aug. 12	H.	19. 3.20	U.	19. 4.27,2
	G.	19. 9.36	U.	19. 7.54,5
	G.	20.10.32	U.	20. 8.50,0
	H.	20.13.20	U.	20.14.27,4
Aug. 17	H.	20.39.37	U.	20.40.44,1
	G.	20.40. 9	X.	20.37.10,0
	H.	20.39.43	X.	20.40.45,5
	H.	21.28.17	U.	21.29.24,0

Day of Comparison.	Clock.	Clock Time.	Chron.	Chronometer Time.
1843.		h. m. s.		h. m. s.
Aug. 17	G.	21.35. 9	W.	11.46.31,0
	H.	21.35. 7	W.	11.50.30,5
Oct. 1	G.	20. 4.58	U.	20. 5. 7,0
	H.	20. 7.16	U.	20. 7.21,6
	H.	20.10.24	X.	20.10.25,7
Nov. 7	H.	22.52.29	U.	22.53.22,2
	G.	23. 2. 5	U.	23. 2. 2,0
Nov. 8	G.	4.52.52	X.	4.51. 1,5
	H.	4.58.11	X.	4.57.39,6
	G.	5.43.20	X.	5.41.28,7
	H.	5.49. 2	X.	5.48.30,5
	G.	6.15.42	X.	6.13.50,1
	H.	6.20.21	X.	6.19.49,4
Nov. 11	G.	3.45.33	U.	3.44.18,0
	H.	3.45.24	U.	3.46.23,5
	G.	4.51.52	U.	4.50.36,5
	H.	4.51.33	U.	4.52.32,9

Day of Observation 1843.	Refe. No.	Phenomenon.	Moon's Limb.	Clock or Chronom.	Instrument.	Time noted.	Sidereal Time.	Greenwich Mean Solar Time.	Observer.
						h. m. s.	h. m. s.	h. m. s.	
April 10	1	Disappearance of 16 Sextantis	Dark	G.	5-feet Equatoreal	13.37.54,1	13.37.15,77	12.22.34,35	G.
May 3	2	Disappearance of 3 Geminorum	Dark	G.	5-feet Equatoreal	11.49.43,3	11.46. 8,17	9. 1.19,05	G.
...	3	Reappearance of 3 Geminorum	Bright	G.	5-feet Equatoreal	12.39.13,4	12.35.38,20	9.50.40,99	G.
June 3	4	Disappearance of *h* Leonis	Dark	G.	5-feet Equatoreal	13.35.13,4	13.31 16,06	8.44.16,50	G.
...	5	Reappearance of *h* Leonis	Bright	G.	5-feet Equatoreal	14.32.10,6	14.28.13,28	9.41. 4,38	G.
Aug. 12	6	Disappearance of κ^2 Piscium	Bright	G.	5-feet Equatoreal	19. 1.54,1	18.59.58,62	9.36.51,42	G.
...	7	Reappearance of κ^2 Piscium	Dark	G.	5-feet Equatoreal	20. 5.32,9	20. 3.36,75	10.40.19,13	G.
17	8	Disappearance of τ^1 Arietis	Bright	G. U.	5-feet Equatoreal 46-inch Dollond	20.38.15,0 20.34.55,0	20.35.10,23 20.34.44,63	10.52. 7,89 10.51.42,36	C. G.
...	9	Reappearance of τ^1 Arietis	Dark	G. U.	5-feet Equatoreal 46-inch Dollond	21.29.57,9 21.27. 4,8	21.26.52,50 21.26.54,55	11.43.41,69 11.43.43,73	C. G.
Oct. 1	10	Disappearance of *f* Sagittarii	Dark	X. G. H.	Northumb. Equat. 5-feet Equatoreal 46-inch Dollond	20. 3.30,0 20. 3.24,9 20. 3.28,0	20. 3.49,39 20. 3.49,39 20. 3.49,09	7.23.56,36 7.28.56,36 7.23.56,06	C. G. B.
Nov. 7	11	Disappearance of 65 Arietis	Bright	G.	5-feet Equatoreal	22.48.26,0	22.47.52,46	7.42. 3,96	G.
8	12	Disappearance of υ^1 Tauri	Bright	G.	5-feet Equatoreal	4.57.25,4	4.56.28,74	13.45.43,94	G.
...	13	Disappearance of υ^2 Tauri	Bright	G.	5-feet Equatoreal	5.48.22,4	5.47.25,03	14.36.31,88	G.
...	14	Reappearance of υ^1 Tauri	Dark	G.	5-feet Equatoreal	6.19.12,8	6.18.14,92	15. 7.16,72	G.
11	15	Disappearance of ζ Geminorum	Bright	G.	5-feet Equatoreal	3.42.36,7	3.40.43,36	12.18.23,24	G.
...	16	Reappearance of ζ Geminorum	Dark	G.	5-feet Equatoreal	4.46. 3,1	4.44. 8,84	13.21.38,33	G.

N°. 1. Good. N°. 2. Very accurate observation: the Limb was distinctly visible.

N°. 3. Good, for a reappearance at the bright Limb.

N°. 4. Very satisfactory. N°. 5. Pretty good.

N^{os}. 6 and 7. Both considered satisfactory.

N°. 8. 'Good.' (C). 'Very doubtful: may be some seconds in error, as the star was barely visible.' (G).

N°. 9. 'Very exact.' (C) 'Good.' (G).

N°. 10. All three observations very good.

N°. 11. Not certain to a second, the star being excessively faint.

N^{os}. 12—16. All these observations were considered to be very accurate.

Disappearance of 16 Sextantis, April 10, $12^h.22^m.34^s,35 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$204^\circ.18'.56'',55 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$150.29.45,60 + 0,5620 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$82.17.55,97 + 0,2394 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$1.0.3,02 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$16.21,80 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$150.15.47,25 + e''$
Star's N.P.D.	$83.3.53,40 + f.$

Moon's apparent Right Ascension in arc	$149^\circ.59'.32'',26+0'',4704t+0'',5659\tau+1'',0064x+0'',0012y-1'',8249m$
Moon's apparent N.P.D.	$83.2.11,86+0,2567t+0,2407\tau-0,0011x+1,0080y+2,6783m$
Moon's apparent Semidiameter	$16.29,71-0,0006t+0,9897n.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
&16'.13'',14 + 0'',9872 \times \{e - 0,4704\,t - 0,5659\,\tau - 1,0064\,x - 0,0012\,y + 1,8249\,m\}\\
&\quad - 0'',1040 \times \{\ + 0,2567\,t + 0,2407\,\tau - 0,0011\,x + 1,0080\,y + 2,6783\,m\}\\
&\quad + 0'',1046 \times f.
\end{aligned}
$$

Final Equation:

$$+16'',57 = 0,9872\,e + 0,1046\,f - 0,9934\,x - 0,1060\,y + 0,4383\,t - 0,5837\,\tau + 1,5230\,m - 0,9897\,n.$$

Disappearance of 3 Geminorum, May 3, $9^h.1^m.19^s,05 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$176^\circ.32'.2'',55 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$90.25.6,00 + 0,5771 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$66.16.54,86 + 0,0489 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$56.4,25 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$15.16,77 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$90.3.14,10 + e''$
Star's N.P.D.	$66.52.0,20 + f.$

Moon's apparent Right Ascension in arc	$89^\circ.47'.33'',50+0'',5684t+0'',5777\tau+1'',0006x+0'',0048y-2'',2540m$
Moon's apparent N.P.D.	$66.55.39,55+0,1061t+0,0469\tau-0,0039x+1,0057y+2,4028m$
Moon's apparent Semidiameter	$15.21,99-0,0006t+0,9220n.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
&15'.9'',20 + 0'',8751 \times \{e - 0,5684\,t - 0,5777\,\tau - 1,0006\,x - 0,0048\,y + 2,2540\,m\}\\
&\quad + 0'',3081 \times \{\ + 0,1061\,t + 0,0469\,\tau - 0,0039\,x + 1,0057\,y + 2,4028\,m\}\\
&\quad - 0'',3063 \times f.
\end{aligned}
$$

Final Equation:

$$+12'',79 = 0,8751\,e - 0,3063\,f - 0,8768\,x + 0,3057\,y - 0,4641\,t - 0,4911\,\tau + 2,7128\,m - 0,9220\,n.$$

Reappearance of 3 Geminorum, May 3, $9^h.50^m.40^s,99 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$188°.54'.33'',00 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc......	$90.53.35,25 + 0,5771 \times (t + \tau) + x''$
Moon's Geocentric N.P.D.	$67.1.56,71 - 0,0514 \times (t + \tau) + y$
Moon's Horizontal Equatoreal Parallax	$56.5,39 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$15.17,07 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$90.3.14,10 + e''$
Star's N.P.D.	$66.52.0,20 + f.$

Moon's apparent Right Ascension in arc	$90°.16'.24'',63 + 0'',6004t + 0'',5759\tau + 0'',9984x + 0'',0047y - 2'',2271m$
Moon's apparent N.P.D.	$67.1.56,71 + 0,0045t - 0,0538\tau - 0,0039x + 1,0037y + 2,5681m$
Moon's apparent Semidiameter............	$15.20,52 - 0,0006t + 0,9205\,n.$

Apparent Distance of Star from Moon's centre:

$$15'.40'',72 + 0'',7114 \times \{-e + 0,6004t + 0,5759\tau + 0,9984x + 0,0047y - 2,2271m\}$$
$$+ 0'',6346 \times \{\ + 0,0045t - 0,0538\tau - 0,0039x + 1,0037y + 2,5681m\}$$
$$- 0'',6334 \times f.$$

Final Equation:

$$-20'',20 = -0,7114e - 0,6334f + 0,7078x + 0,6403y + 0,4306t + 0,3756\tau + 0,0454m - 0,9205n.$$

Disappearance of *h* Leonis, June 3, $8^h.44^m.16^s,50 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$202°.49'.0'',90 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc......	$141.9.48,15 + 0,5401 \times (t + \tau) + x''$
Moon's Geocentric N.P.D.	$78.51.57,15 + 0,2103 \times (t + \tau) + y$
Moon's Horizontal Equatoreal Parallax	$58.10,17 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$15.51,10 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$140.53.19,20 + e''$
Star's N.P.D.	$79.35.49,70 + f.$

Moon's apparent Right Ascension in arc	$140°.37'.36'',42 + 0'',4684t + 0'',5432\tau + 1'',0050x + 0'',0019y - 1'',9414m$
Moon's apparent N.P.D.	$79.33.54,58 + 0,2361t + 0,2109\tau + 0,0017x + 1,0073y + 2,5375m$
Moon's apparent Semidiameter............	$15.58,08 - 0,0006t + 0,9581\,n.$

Apparent Distance of Star from Moon's centre:

$$15'.34'',35 + 0'',9761 \times \{e - 0,4684t - 0,5432\tau - 1,0050x - 0,0019y + 1,9414m\}$$
$$- 0'',1228 \times \{\ + 0,2361t + 0,2109\tau - 0,0017x + 1,0073y + 2,5375m\}$$
$$+ 0'',1236 \times f.$$

Final Equation:

$$+23''73 = 0,9761e + 0,1236f - 0,9808x - 0,1256y - 0,4857t - 0,5561\tau + 1,5834m - 0,9581n.$$

Reappearance of h Leonis, June 3, $9^h.41^m.4^s,38 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$217^\circ.\ 3'.\ 19'',20 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$141.\ 40.\ 27,75 + 0,5395 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$79.\ 3.\ 55,60 + 0,2114 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$58.\ 11,34 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$15.\ 51,42 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$140.\ 53.\ 19,20 + e''$
Star's N.P.D.	$79.\ 35.\ 49,70 + f.$

Moon's apparent Right Ascension in arc	$141^\circ.\ 5'.\ 9'',65 + 0'',5025\,t + 0'',5413\,\tau + 1'',0026\,x + 0'',0020\,y - 2'',1236\,m$
Moon's apparent N.P.D.	$79.\ 47.\ 24,54 + 0,2385\,t + 0,2115\,\tau - 0,0018\,x + 1,0049\,y + 2,6238\,m$
Moon's apparent Semidiameter...........	$15.\ 56,17 - 0,0007\,t + 0,9562\,n.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
&16'.\ 25'',59 + 0'',6978 \times \{- e + 0,5025\,t + 0,5413\,\tau + 1,0026\,x + 0,0020\,y - 2,1236\,m\} \\
&\qquad + 0'',7052 \times \{\qquad + 0,2385\,t + 0,2115\,\tau - 0,0018\,x + 1,0049\,y + 2,6238\,m\} \\
&\qquad - 0'',7048 \times f.
\end{aligned}
$$

Final Equation:

$$- 29'',42 = - 0,6978\,e - 0,7048\,f + 0,6983\,x + 0,7101\,y + 0,5195\,t + 0,5269\,\tau + 0,3685\,m - 0,9562\,n.$$

Disappearance of κ^2 Piscium, Aug. 12, $9^h.\ 36^m.\ 51^s,42 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$284^\circ.\ 59'.\ 39'',30 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$349.\ 9.\ 26,10 + 0,4611 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$89.\ 12.\ 37,25 - 0,2059 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.\ 39,28 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$14.\ 53,64 \times (1 + 0,001\,n)$
Star's Right Ascension in arc......................	$349.\ 49.\ 1,65 + e''$
Star's N.P.D.	$89.\ 43.\ 48,10 + f.$

Moon's apparent Right Ascension in arc	$349^\circ.\ 39'.\ 46'',08 + 0'',4002\,t + 0'',4631\,\tau + 1'',0042\,x - 0'',0001\,y + 1'',8277\,m$
Moon's apparent N.P.D.	$89.\ 55.\ 35,77 - 0,2070\,t - 0,2068\,\tau + 0,0000\,x + 1,0043\,y + 2,5897\,m$
Moon's apparent Semidiameter...........	$14.\ 57,51 + 0,0006\,t + 0,8975\,n.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
&14'.\ 59'',70 + 0'',6175 \times \{e - 0,4002\,t - 0,4631\,\tau - 1,0042\,x + 0,0001\,y - 1,8277\,m\} \\
&\qquad + 0'',7865 \times \{\ - 0,2070\,t - 0,2068\,\tau + 0,0000\,x + 1,0043\,y + 2,5897\,m\} \\
&\qquad - 0'',7865 \times f.
\end{aligned}
$$

Final Equation:

$$- 2'',19 = 0,6175\,e - 0,7865\,f - 0,6201\,x + 0,7899\,y - 0,4105\,t - 0,4486\,\tau + 0,9082\,m - 0,8975\,n.$$

Reappearance of κ^2 Piscium, Aug. 12, $10^h.40^m.19^s,13+t^s+\tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$300°.54'.11'',25 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$349.38.41,40 + 0,4609 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$88.59.33,67 - 0,2057 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.38,39 \times (1 + 0,001\, m)$
Moon's Geocentric Semidiameter..................	$14.53,39 \times (1 + 0,001\, n)$
Star's Right Ascension in arc.....................	$349.49.\ 1,65 + e''$
Star's N.P.D.	$89.43.48,10 + f.$

Moon's apparent Right Ascension in arc	$350°.\ 4'.\ 4'',54+0'',3673t+0'',4639\tau+1'',0064x-0'',0001y+1'',5329m$
Moon's apparent N.P.D....................	$89.42.25,83-0,2076t-0,2070\tau+0,0000x+1,0065y+2,5890m$
Moon's apparent Semidiameter............	$14.59,28+0,0005t+0,8993\tau.$

Apparent Distance of Star from Moon's centre:

$$\begin{aligned}15'.\ 6'',62 &+ 0'',9959 \times \{-e + 0,3673\,t + 0,4639\tau + 1,0064x - 0,0001\,y + 1,5329m\}\\ &- 0'',0907 \times \{\quad - 0,2076\,t - 0,2070\,\tau + 0,0000x + 1,0065y + 2,5890m\}\\ &+ 0'',0907 \times f.\end{aligned}$$

Final Equation:

$$-7'',34 = -0,9959\,e + 0,0907f + 1,0023\,x - 0,0914\,y + 0,3841\,t + 0,4808\,\tau + 1,2918\,m - 0,8993n.$$

Disappearance of τ^1 Arietis, Aug. 17, $10^h.52^m.7^s,89+t^s+\tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$308°.47'.33'',45 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc......	$47.16.17,10 + 0,5242 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$68.53.22,90 - 0,1020 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.33,34 \times (1 + 0,001\, m)$
Moon's Geocentric Semidiameter..................	$14.52,04 \times (1 + 0,001\, n)$
Star's Right Ascension in arc.....................	$48.\ 3.26,40 + e''$
Star's N.P.D.	$69.25.\ 8,80 + f.$

Moon's apparent Right Ascension in arc	$47°.51'.44'',51+0'',5483t+0'',5238\tau+0'',9984x-0'',0040y+2'',1240m$
Moon's apparent N.P.D....................	$69.35.23,13-0,1556t-0,1050\tau+0,0034x+1,0120y+2,5314m$
Moon's apparent Semidiameter............	$14.54,76+0,0006t+0,8948\,n.$

Apparent Distance of Star from Moon's centre:

$$\begin{aligned}14'.\ 59'',81 &+ 0'',6845 \times \{e - 0,5483\,t - 0,5238\,\tau - 0,9984\,x + 0,0040y - 2,1240m\}\\ &+ 0'',6832 \times \{\quad - 0,1556\,t - 0,1050\,\tau + 0,0034\,x + 1,0120y + 2,5314\,m\}\\ &+ 0'',6824 \times f.\end{aligned}$$

Final Equation:

$$-5'',05 = 0,6845\,e - 0,6824f - 0,6811\,x + 0,6941\,y - 0,4822\,t - 0,4303\,\tau + 0,2756\,m - 0,8948\,n.$$

Reappearance of τ^1 Arietis, Aug. 17, $11^h.43^m.41^s,69 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$321^\circ.43'.\ 7'',50 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$47.43.19,80 + \ 0,5250 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$68.48.\ 9,46 - \ 0,1006 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.34,14 \times (1 + 0,001\ m)$
Moon's Geocentric Semidiameter	$14.52,23 \times (1 + 0,001\ n)$
Star's Right Ascension in arc	$48.\ 3.26,40 + e''$
Star's N.P.D.	$69.25.\ 8,80 + f.$

Moon's apparent Right Ascension in arc	$48^\circ.19'.12'',15 + 0'',5164t + 0'',5257\tau + 1'',0006x - 0'',0040y + 2'',1538m$
Moon's apparent N.P.D.	$69.27.35,82 - 0,1510t - 0,0994\tau + 0,0034x + 1,0056y + 2,3820m$
Moon's apparent Semidiameter...........	$14.56,75 + 0,0006t + 0,8967n.$

Apparent Distance of Star from Moon's centre:

$$\begin{aligned}14'.57'',63 &+ 0'',9240 \times \{-e + 0,5164t + 0,5257\tau + 1,0006x - 0,0040y + 2,1538m\}\\ &+ 0'',1645 \times \{\quad - 0,1510t - 0,0994\tau + 0,0034x + 1,0056y + 2,3820m\}\\ &- 0'',1629 \times f.\end{aligned}$$

Final Equation:

$$-0'',88 = -0,9240e - 0,1629f + 0,9251x + 0,1617y + 0,4517t + 0,4694\tau + 2,3820m - 0,8967n.$$

Disappearance of f Sagittarii, Oct. 1, $7^h.23^m.56^s,36 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$300^\circ.57'.20'',85 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$294.\ 9.21,90 + \ 0,5553 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$109.22.\ 0,58 - \ 0,1298 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$56.43,27 \times (1 + 0,001\ m)$
Moon's Geocentric Semidiameter	$15.27,39 \times (1 + 0,001\ n)$
Star's Right Ascension in arc	$294.19.\ 4,50 + e''$
Star's N.P.D.	$110.\ 7.43,90 + f.$

Moon's apparent Right Ascension in arc	$294^\circ.\ 4'.56'',84 + 0'',3990t + 0'',5614\tau + 1'',0108x - 0'',0005y - 0'',2679m$
Moon's apparent N.P.D.	$110.15.50,56 - 0,1366t - 0,1302\tau + 0,0004x + 1,0050y + 3,2463m$
Moon's apparent Semidiameter...........	$15.32,10 - 0,0008t + 0,9321n.$

Apparent Distance of Star from Moon's centre:

$$\begin{aligned}15'.32'',59 &+ 0'',8006 \times \{e - 0,3990t - 0,5614\tau - 1,0108x + 0,0005y + 0,2679m\}\\ &+ 0'',5212 \times \{\ - 0,1366t - 0,1302\tau + 0,0004x + 1,0050y + 3,2463m\}\\ &- 0'',5224 \times f.\end{aligned}$$

Final Equation:

$$-0'',49 = 0,8006e - 0,5224f - 0,8090x + 0,5242y - 0,3899t - 0,5173\tau + 1,9065m - 0,9321n.$$

Disappearance of 65 Arietis, Nov. 7, $7^h.42^m.3^s,96 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$341°.58'.6'',90 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc......	$48.4.40,20 + 0,5218 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$69.14.28,58 - 0,0955 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.7,92 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$14.45,06 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$48.52.1,35 + e''$
Star's N.P.D.	$69.45.4,30 + f$.

Moon's apparent Right Ascension in arc	$48°.37'.18'',19+0'',4625t+0'',5243\tau+1'',0041x-0'',0036y+1'',9661m$
Moon's apparent N.P.D.	$69.49.51,38-0,1411t-0,0947\tau+0,0031x+1,0080y+2,1428m$
Moon's apparent Semidiameter............	$14.52,16+0,0005t+0,8922n$.

Apparent Distance of Star from Moon's centre:

$$\begin{aligned}14'.37'',10 &+ 0'',8866 \times \{e - 0,4625t - 0,5243\tau - 1,0041x + 0,0036y - 1,9661m\}\\ &+ 0'',3280 \times \{\ -0,1411t - 0,0947\tau + 0,0031x + 1,0080y + 2,1428m\}\\ &- 0'',3266 \times f.\end{aligned}$$

Final Equation:

$$+15'',06 = 0,8866e - 0,3266f - 0,8892x + 0,3338y - 0,4568t - 0,4959\tau - 1,0403m - 0,8922n.$$

Disappearance of υ^1 Tauri, Nov. 8, $13^h.45^m.43^s,94 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$74°.7'.11'',10 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc......	$64.5.31,65 + 0,5426 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$67.7.10,14 - 0,0443 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.25,52 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$14.49,83 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$64.15.5,70 + e''$
Star's N.P.D.	$67.32.39,40 + f$.

Moon's apparent Right Ascension in arc	$63°.59'.8'',76+0'',3905t+0'',5483\tau+1'',0105x+0'',0008y-0'',3869m$
Moon's apparent N.P.D.	$67.34.11,38-0,0353t-0,0453\tau-0,0007x+1,0138y+1,6437m$
Moon's apparent Semidiameter............	$15.2,12-0,0001t+0,9021n$.

Apparent Distance of Star from Moon's centre:

$$\begin{aligned}14'.49'',23 &+ 0'',9194 \times \{e - 0,3905t - 0,5483\tau - 1,0105x - 0,0008y + 0,3869m\}\\ &+ 0'',1043 \times \{\ -0,0353t - 0,0453\tau - 0,0007x + 1,0138y + 1,6437m\}\\ &- 0'',1025 \times f.\end{aligned}$$

Final Equation:

$$+12'',89 = 0,9194e - 0,1025f - 0,9291x + 0,1050y - 0,3626t - 0,5088\tau + 0,5272m - 0,9021n.$$

Disappearance of υ^2 Tauri, Nov. 8, $14^h.36^m.31^s,88 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$86^\circ.51'.15'',45 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$64.33.\ 6,00 + 0,5431 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$67.\ 4.57,42 - 0,0428 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.26,11 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$14.50,00 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$64.29.56,10 + e''$
Star's N.P.D.	$67.21.33,90 + f.$

Moon's apparent Right Ascension in arc	$64^\circ.19'.11'',64 + 0'',4001\,t + 0'',5484\,\tau + 1'',0099\,x + 0'',0017\,y - 0'',8426\,m$
Moon's apparent N.P.D.	$67.32.43,83 - 0,0209\,t - 0,0426\,\tau - 0,0014\,x + 1,0032\,y + 1,6892\,m$
Moon's apparent Semidiameter	$15.\ 1,81 - 0,0002\,t + 0,9018\,n.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
14'.56'',14 &+ 0'',6135 \times \{e - 0,4001\,t - 0,5484\,\tau - 1,0099\,x - 0,0017\,y + 0,8426\,m\} \\
&+ 0'',7479 \times \{\quad - 0,0209\,t - 0,0426\,\tau - 0,0014\,x + 1,0132\,y + 1,6892\,m\} \\
&- 0'',7471 \times f.
\end{aligned}
$$

Final Equation:

$$+\,5'',67 = 0,6135\,e - 0,7471\,f - 0,6206\,x + 0,7567\,y - 0,2609\,t - 0,3683\,\tau + 1,7803\,m - 0,9018\,n.$$

Reappearance of υ^1 Tauri, Nov. 8, $15^h.7^m.16^s,72 + t^s + \tau^s$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$94^\circ.33'.43'',80 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$64.49.48,15 + 0,5432 \times (t+\tau) + x''$
Moon's Geocentric N.P.D.	$67.\ 3.39,38 - 0,0419 \times (t+\tau) + y$
Moon's Horizontal Equatoreal Parallax	$54.26,48 \times (1 + 0,001\,m)$
Moon's Geocentric Semidiameter	$14.50,10 \times (1 + 0,001\,n)$
Star's Right Ascension in arc	$64.15.\ 5,70 + e''$
Star's N.P.D.	$67.32.39,40 + f.$

Moon's apparent Right Ascension in arc	$64^\circ.31'.38'',13 + 0'',4097\,t + 0'',5481\,\tau + 1'',0092\,x + 0'',0023\,y - 1'',1001\,m$
Moon's apparent N.P.D.	$67.32.\ 9,50 - 0,0151\,t - 0,0434\,\tau - 0,0019\,x + 1,0127\,y + 1,7329\,m$
Moon's apparent Semidiameter	$15.\ 1,44 - 0,0003\,t + 0,9014\,n.$

Apparent distance of Star from Moon's centre:

$$
\begin{aligned}
15'.17'',64 &+ 0'',9236 \times \{-e + 0,4097\,t + 0,5481\,\tau + 1,0092\,x + 0,0023\,y - 1,1001\,m\} \\
&- 0'',0317 \times \{\quad - 0,0151\,t - 0,0434\,\tau - 0,0019\,x + 1,0127\,y + 1,7329\,m\} \\
&+ 0'',0335 \times f.
\end{aligned}
$$

Final Equation:

$$-\,16'',20 = -\,0,9236\,e + 0,0335\,f + 0,9322\,x - 0,0300\,y + 0,3792\,t + 0,5076\,\tau - 1,0710\,m - 0,9014\,n.$$

Disappearance of ζ Geminorum, Nov. 11, $12^{h}.18^{m}.23^{s},24 + t^{s} + \tau^{s}$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$55^{\circ}.10'.50'',40 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$103.\ 0.54,90 + \ 0,5507 \times (t + \tau) + x''$
Moon's Geocentric N.P.D.	$68.45.52,81 - \ 0,0913 \times (t + \tau) + y$
Moon's Horizontal Equatoreal Parallax	$55.36,71 \times (1 + 0,001\, m)$
Moon's Geocentric Semidiameter	$15.\ 9,21 \times (1 + 0,001\, n)$
Star's Right Ascension in arc	$103.43.11,70 + e''$
Star's N.P.D.	$69.12.24,70 + f.$

Moon's apparent Right Ascension in arc	$103^{\circ}.28'.15'',68 + 0'',4475\,t + 0'',5549\,\tau + 1'',0071\,x - 0'',0031\,y + 1'',6525\,m$
Moon's apparent N.P.D.	$69.18.44,66 - 0,1307\,t - 0,0908\,\tau + 0,0026\,x + 1,0108\,y + 1,9954\,m$
Moon's apparent Semidiameter	$15.19,09 + 0,0005\,t + 0,9191\,\tau.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
15'.\,20'',07 &+ 0'',8519 \times \{e - 0,4475\,t - 0,5549\,\tau - 1,0071\,x + 0,0031\,y - 1,6525\,m\} \\
&+ 0'',4137 \times \{\ - 0,1307\,t - 0,0908\,\tau + 0,0026\,x + 1,0108\,y + 1,9954\,m\} \\
&- 0'',4123 \times f.
\end{aligned}
$$

Final Equation:

$$- 0'',98 = 0,8519\,e - 0,4123\,f - 0,8569\,x + 0,4208\,y - 0,4342\,t - 0,5103\,\tau - 0,5823\,m - 0,9191\,n.$$

Reappearance of ζ Geminorum, Nov. 11, $13^{h}.21^{m}.38^{s},33 + t^{s} + \tau^{s}$ Greenwich Mean Solar Time.

Right Ascension of Zenith in arc	$71^{\circ}.\ 2'.12'',60 + 15'',0411 \times t$
Moon's Geocentric Right Ascension in arc	$103.35.44,25 + \ 0,5504 \times (t + \tau) + x''$
Moon's Geocentric N.P.D.	$68.51.43,04 + \ 0,0933 \times (t + \tau) + y$
Moon's Horizontal Equatoreal Parallax	$55.38,13 \times (1 + 0,001\, m)$
Moon's Geocentric Semidiameter	$15.\ 9,59 \times (1 + 0,001\, n)$
Star's Right Ascension in arc	$103.43.11,70 + e''$
Star's N.P.D.	$69.12.24,70 + f.$

Moon's apparent Right Ascension in arc	$103^{\circ}.55'.37'',49 + 0'',4195\,t + 0'',5552\,\tau + 1'',0090\,x - 0'',0023\,y + 1'',2040\,m$
Moon's apparent N.P.D.	$69.22.33,31 + 0,0006\,t + 0,0955\,\tau + 0,0019\,x + 1,0125\,y + 1,8745\,m$
Moon's apparent Semidiameter	$15.20,96 + 0,0003\,t + 0,9210\,n.$

Apparent Distance of Star from Moon's centre:

$$
\begin{aligned}
15'.\,25'',77 &+ 0'',7049 \times \{- e + 0,4195\,t + 0,5552\,\tau + 1,0090\,x - 0,0023\,y + 1,2040\,m\} \\
&+ 0'',6579 \times \{\ + 0,0666\,t + 0,0955\,\tau + 0,0019\,x + 1,0125\,y + 18745\,m\} \\
&- 0'',6569 \times f.
\end{aligned}
$$

Final Equation:

$$- 4'',81 = - 0,7049\,e - 0,6569\,f + 0,7125\,x + 0,6645\,y + 0,3392\,t + 0,4542\,\tau + 2,0819\,m - 0,9210\,n.$$

Hourly Meteorological Observations made at the Cambridge Observatory near the time of the Summer Solstice, 1843.

Day and Hour.		Barom.	Att. Ther.	Exter. Ther.	Clouds 0–10.	Class of Clouds.	Direction of Wind.	Strength of Wind 0–6.	Remarks.
	h.	Inches.	o	o					
June 20.	18	30,176	52,9	48,9	8	Cirri	S. W. by S.	1,2	Very fine; sky nearly covered by cirri.
	19	,162	51,6	50,8	8	....	....	...	... ...
	20	,156	54,7	54,4	6	....	....	...	... ; clearer.
	21	,154	55,6	55,1	3	....	S.W.	...	... ; still clearer.
	22	,148	57,7	56,9	1	....	S. W. by S.	...	... ; small cumuli scattered; mistiness in S. horizon.
	23	,140	59,4	59,0	2	Cirri and Cumuli	S.W.	...	... ... ; mistiness in W. horizon.
June 21.	0	,136	60,8	61,3	2	Cumuli	S. W. by S.	2,3	... ; clouds in N.W. horizon.
	1	,132	62,5	63,8	5	Nimbi and Cumuli	S.W.	1,2	... ; clouds chiefly in the N.
	2	,110	62,5	65,8	9	Nimbi	S.W. by W.	1	Fine; misty nimbi nearly cover sky.
	3	,096	63,0	66,0	8	....	S.W. by W.	1	... ; nimbi less misty.
	4	,074	64,0	69,6	8	....	....	1,2	... ; dark clouds towards N.
	5	,068	63,9	66,8	10	....	S.W.	1,2	Sky covered by thin hazy cloud through which the Sun shines feebly. Wind fitful and variable.
	6	,058	62,5	64,2	10	....	S.W. by S.	1	Clouds denser: much haze. Wind very gentle.
	7	,054	61,9	62,8	10	....	S.W. by S.	1	As before, excepting that the clouds are a little broken in N.W.
	8	,056	62,1	62,8	10	....	W.N.W.	1	Clouds light in Zenith; dense elsewhere.
	9	,058	60,9	59,7	10	....	N.N.W.	1	... ...
	10	,064	60,3	58,1	10	....	N.W.	1	... ...
	11	,064	59,6	57,2	10	....	W. by N.	0,1	... ...
	12	,062	59,1	56,0	10	....	W. N. W.	0,1	Clouds dense everywhere.
	13	,056	58,2	55,3	10	....	N.W. by W.	1	Clouds generally dense; air pleasant.
	14	,048	57,0	54,0	10	....	W. N. W.	1	... ...
	15	,040	57,0	55,0	10	....	....	1	... ...
	16	,038	56,9	55,2	10	....	N. W.	1	... ... ; Wind shifting occasionally to W.N.W.
	17	,040	56,8	54,3	10	....	N. W.	1	Clouds lighter, a few small patches of blue sky in N.W.
	18	,046	56,6	56,3	9	....	N.W. by N.	1	Clouds breaking, blue sky in N.W. Wind veering northward.
	19	,052	57,2	58,8	9	....	N.N.W.	1,2	Clouds very light, sun shining through.
	20	,058	58,0	59,1	10	....	N.N.W.	2	Wind brisker and shifting about. Clouds much denser.
	21	,060	58,7	62,1	9	Nimbi Stratus and Cumuli.	N.N.W.	1,2	Patches of blue sky in different quarters. Clouds more broken.
	22	,068	59,8	62,4	6	Nimbi and Cumuli	N. W.	1,2	Fine and warm. The wind shifts about N.W.
	23	,072	61,3	64,7	9	....	N.	1,2	... ; few patches of misty blue sky.
June 22.	0	,074	61,5	65,1	9	....	N.	1	... ...
	1	,072	61,8	66,6	8	....	N.N.E.	1	... ; more blue sky; sun shining brightly.
	2	,074	62,3	66,0	7	Cirri and Cumuli	N. by E.	1	... ...
	3	,078	62,2	64,2	7	....	N.N. E.	1	... ; Sun quite clouded; blue sky in N.E.
	4	,082	62,1	64,8	6	Nimbi and Cumuli	N. N. E.	1	... ... ; heavy clouds S.E.
	5	,086	61,7	63,6	5	Cumuli and Stratus	N. N. E.	1,2	... ; Wind shifts to N.E.
	6	30,090	61,4	62,1	4	Cumuli and Stratus	N.N.E.	1,2	... ; quite clear from N.W. to N.E. up to Zenith.

Hourly Meteorological Observations made at the Cambridge Observatory near the time of the Autumnal Equinox, 1843.

Day and Hour.		Barom.	Att. Ther.	Exter. Ther.	Clouds 0–10.	Class of Clouds.	Strength of Wind 0–6.	Direction of Wind.	Remarks.
	h.	Inches.	°	°					
Sept. 20.	18	30,200	63,4	52,2	6	Cirri	0,1	S. S. W.	Horizon cloudy and misty all round to height of 18° or 20°: cirri above.
	19	,202	61,0	55,3	5	....	1	S. W.	... ...
	20	,216	61,4	58,9	6	....	1	N.	Generally cloudy and misty, especially in E. and N.E. Zenith clear.
	21	,228	62,1	60,6	4	....	0,1	W. S. W.	Clearer, but horizon still very misty.
	22	,248	63,3	62,7	9	Nimbi	0,1	N. W.	Misty nimbi nearly covers sky: much mist in horizon.
	23	,250	64,6	65,1	4	....	0,1	N. E.	Much haze, with scattered misty nimbi; ... ...
Sept. 21.	0	,250	65,6	68,3	3	Nimbi and Cumuli	0,1	N.	... ... ; and cumuli.
	1	,250	67,0	69,7	6	Cumuli Cirri and Cirro-cum	1	N. W. by N.	Fine; clearer atmosphere.
	2	,252	68,4	70,3	8	....	1	N. N. W.	... ... Much cirri.
	3	,268	68,1	68,6	9	....	1,2	N.	Freshening breeze; fine but cloudy.
	5	,286	66,1	65,7	10	Nimbi	1	N.	Gentle wind; fine but quite cloudy.
	6	,288	65,6	63,5	10	....	0,1	N.	... ...
	7	,312	65,4	63,3	10	....	1	N.	... ...
	8	,322	64,8	62,9	10	....	1	N.	... ... Very dark.
	9	,336	64,3	61,6	10	....	0,1	N.	Densely clouded.
	10	,344	64,0	61,2	10	....	0,1	N.	... ...
	11	,356	64,3	60,3	9	....	0,1	N.	A few stars visible,—a break towards the South.
	12	,366	64,1	58,2	3	....	1	N. by W.	Clouds dispersed except near the horizon; wind a little brisker.
	13	,376	63,8	57,5	8	....	0,1	N.	More clouded: stars visible about the zenith.
	14	,380	63,6	57,1	9	....	2	N.	Wind brisker. More clouds. Very dark.
	15	,388	63,4	55,8	2	....	1	N.	Clouds dispersed—getting very clear.
	16	,392	63,6	54,1	3	....	1	N.	Zenith quite clear; horizon cloudy.
	17	,406	63,4	52,1	3	Nimbi and Stratus	1,2	N. by W.	Some clouds in N. horizon, and heavy dense ones in S.E.
	18	,428	62,4	52,2	10	Nimbi	1	N. by W.	Quite cloudy with very thick fog.
	19	,448	62,8	52,8	10	....	1	N. by W.	... ... Much moisture.
	20	,480	63,7	54,4	10	....	0,1	N.	... ...
	21	,492	61,4	56,3	10	....	0,1	N.	Fog rapidly disappearing and clouds lighter.
	22	,506	61,8	59,5	2	Cumuli	1	N. E.	Quite fine and mostly clear: horizon cloudy.
	23	,428	63,6	63,6	6	....	1,2	E. N. E.	Very fine; clouds much broken.
Sept. 22.	0	,428	64,4	64,3	4	....	1,2	N. N. E.	... ...
	1	,426	65,0	66,0	1	....	1,2	E. N. E.	... Scattered small cumuli
	2	,426	65,7	66,6	1	....	1,2	N. N. E.	... ...
	3	,428	66,0	66,5	0		1,2	N. E.	... Quite clear ...
	4	,424	65,8	65,4	0		1	N. N. E.	... ...
	6	30,428	63,7	59,5	0		1	N.	... ...

Hourly Meteorological Observations made at the Cambridge Observatory near the time of the Winter Solstice, 1843.

Day and Hour.		Barom.	Att. Ther.	Exter. Ther.	Strength of Wind 0–6.	Direction of Wind.	Clouds 0–10.	Class of Clouds.	Remarks.
	h.	Inches.	°	°					
Dec. 20.	18	30,366	45,0	44,0	1,2	S.	10	Nimbi	Quite cloudy, though lightly in Zenith.
	19	,384	45,0	41,8	1,2	S. by W.	8	....	Clear to E. Finely formed bank of cloud from S. to E., 10° high.
...	20	,398	44,8	41,6	1,2	S.	4	....	Fine and clear. Bank of cloud in S.W.
	21	,398	44,4	43,4	1,2	S.	9	....	Fine. Atmosphere clear.
	22	,416	45,5	45,5	1,2	S.S.W.	10	....	... ...
	23	,422	46,3	46,5	1,2	S.S.W.	10	....	... ...
Dec. 21.	0	,422	47,3	47,6	1,2	S.S.W.	10	....	... Horizon rather misty.
	1	,422	47,8	48,1	1,2	S.S.W. by W.	10	....	... ...
	2	,424	48,2	48,5	1,2	S.S.W. by W.	10	....	... ...
	3	,436	48,3	48,1	1	S.S.W.	10	....	... ...
	4	,448	48,2	47,7	1	S.S.W.	10	....	... ...
	5	,460	47,2	47,3	1	S.S.W.	10	....	Dampness falling. Horizon excessively misty.
	6	,464	46,8	45,2	2	S.S.W.	10	....	Light rain.
	7	,470	46,8	47,1	2,3	S.S.W. by W.	10	....	...
	8	,472	46,7	47,0	1	W.S.W.	10	....	A slight break in the clouds Westward with lightning from N.N.W. to W.
	9	,480	46,5	46,6	1,2	S.	9	....	Clouds breaking towards S.W. and N.N.W. with a few stars visible in the Zenith.
	10	,478	46,3	46,2	1	S.	10	....	Quite cloudy.
	11	,476	46,7	46,3	1,2	S.	10	....	... ..., and dark.
	12	,474	46,2	46,5	1,2	S.	10	....	... ...
	13	,470	46,5	46,4	1,2	S. by W.	10	....	Excessively dense and dark.
	14	,462	46,2	46,7	2,3	S.	10	....	Rather lighter in the Southern Horizon. Clouds breaking towards the S.E.
	15	,458	46,2	46,4	2,3	S.	10	....	... ... Clouds lighter generally.
	16	,450	46,5	45,9	2	S.	10	....	Quite dense: good breeze.
	17	,448	46,4	45,3	2	S.	10	....	... ...
	18	,444	46,4	44,6	1,2	S. by W.	10	....	... ... ; less mist.
	19	,448	46,0	44,1	1,2	S. by W.	10	....	Quite cloudy, but slightly breaking.
	20	,466	45,7	43,8	1,2	S. by W.	10	....	... ...
	21	,454	45,3	43,9	2	S.	10	....	... ...
	22	,446	45,0	44,3	1,2	S.	10	....	... , but less dense.
	23	,428	45,0	44,8	2	S. by W.	9	....	Misty bank of cloud in S.W.; blue sky above.
Dec. 22.	0	,416	45,2	44,6	2	S. by W.	9	....	... ... ; fog coming on from that quarter.
	1	,388	45,2	44,8	2	S. by W.	1	Cirri	Sky clear; but horizon very misty.
	2	,378	45,8	44,8	2,3	S. by W.	6	Nimbi	Fog banks in W. and S.
	3	,348	45,2	44,6	2,3	S. by W.	10	....	Very foggy in the Horizon generally.
	4	,354	45,8	45,5	2,3	S. by W.	10	....	Excessively dense. A great mist coming on.
	5	,344	46,0	46,1	2,3	S. by W.	10	....	Clouds a little lighter towards E. and S.E. very foggy in Horizon.
	6	30,350	48,2	48,3	2	S.	10	....	Densely clouded.

APPENDIX. N°. I.

OBSERVATIONS MADE IN THE YEAR 1846

WITH THE

NORTHUMBERLAND EQUATOREAL

IN SEARCH OF

THE PLANET NEPTUNE;

AND

CALCULATION OF RESULTS FROM THE OBSERVATIONS.

OBSERVATIONS WITH THE NORTHUMBERLAND EQUATOREAL, &c.

THE observations I undertook in search of the Planet Neptune were carried on in the year 1846 from July 29 to Sept. 29; but the following pages contain only the observations on the four first and two last days of observing, viz. July 29, July 30, Aug. 4, Aug. 12, Sept. 28 and Sept. 29. These have been selected for the purpose of substantiating statements contained in the first of the two Reports of proceedings in the Observatory relating to the Planet, which are subjoined to the following series of observations. The observations of those days suffice also to exemplify the different modes of observing adopted in the search, and to give an idea of their efficiency. It has not been thought worth while to publish the remainder, because the places of the stars, although taken accurately enough for the purpose to which they were directed, are not sufficiently accurate to be worthy of being reduced and catalogued.

The following is the list of predicted places of the Planet which Mr Adams drew up for me, and by which I was guided in selecting the part of the heavens to which the Telescope was directed in the four first days of observing:

Date 1846.	Planet's R.A. h. m.	Planet's N.P.D. ° ′
July 20	21 . 51,3	103 . 0
Aug. 9	21 . 49,5	103 . 9
29	21 . 47,9	103 . 18
Sept. 18	21 . 46,5	103 . 26
Oct. 8	21 . 45,1	103 . 33

For particulars respecting the origin and the issue of these observations, I may refer to the Report above-mentioned, and to an Account which I communicated to the Royal Astronomical Society, which is published in Vol. XVI. of the Society's Memoirs. Explanations of the printed observations and some calculated results are given at the end of the Series.

Series I. .... 1846. July 29.
Reading of Declination Rod .... 102°. 57′.
Reading of Sector Microscope .... 16^d. 10^r,37.
Chronometer X 51^s,5 fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micrometer Reading.	Remarks.
		h. m. s.	r.	
1	9,10	20 . 26 . 58,4	+ 12,3	
2	9,10	27 . 12,0	+ 6,3	
3	8,9	27 . 56,0	+ 17	
4	9	28 . 24,3	+ 12	
5	9	29 . 39,3	+ 1	
6	9,10	32 . 16,1	+ 8	A small star *np* about 40″ distant.
7	9	33 . 33,9	+ 3	
8	9,10	34 . 17,0	+ 9	
9	10	34 . 50,0	+ 7,5	
10	10	35 . 21,0	+ 2,5	
11	10,11	36 . 11,0	+ 1,5	
12	9,10	37 . 0,4	+ 1	
13	9	37 . 5,7	+ 7	
14		38 . 6,0	+ 14	
15	8	38 . 23,8	+ 4,5	
16		38 . 47,2	+ 8	
17	9	40 . 42,7	− 1,3	
18	9,10	42 . 12,3	+ 4	
19		43 . 33,0	− 1	
20	8,9	43 . 41,0	+ 9	
21	10	44 . 33	+ 17	
22	10	44 . 36	+ 13	
23	9,10	46 . 51,0	+ 12	
24	10	47 . 8,0	+ 1	
25	9,10	47 . 53,5	− 2,5	
26	8	48 . 40,2	− 5,8	
27	8,9	50 . 0,0	− 13	
28	10	50 . 10,0	− 6	
29	9	50 . 22,4	− 7	
30	9,10	50 . 48,0	+ 2	
31	5,6	20 . 51 . 16,5	+ 14,5	
32	9	20 . 52 . 5,0	+ 14	
33	8,9	53 . 18,3	− 10	
34	10	54 . 10,1	+ 8,5	
35	10	55 . 15,1	+ 11	
36	10		− 10	
37	9,10	56 . 7,6	+ 15	
38	10	56 . 27	− 9	
39	9	57 . 7,1	− 7	
40	10	57 . 50,0	+ 5	
41	9	20 . 58 . 3,0	− 6	
42	10		+ 3	
43	8,9	21 . 0 . 10,0	− 15,5	
44	9	0 . 57,0	+ 13,7	
45	8,9	1 . 7	+ 13	
46	8	1 . 9	− 7	
47	9,10	2 . 18	− 11	
48	8,9	21 . 2 . 26,5	+ 11	

Series II. .... 1846. July 29.
Reading of Declination Rod .... 102°. 57′.
Reading of Sector Microscope .... 16^d. 10^r,37.
Chronometer X 51^s,5 fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micrometer Reading.	Remarks.
		h. m. s.	r.	
1	9,10	21 . 35 . 5,5	+ 13,5	
2	9	36 . 8,7	+ 9	
3	9,10	36 . 16,4	+ 7	
4	9	37 . 20,6	+ 13	
5	10,11	38 . 4,5	− 1	
6	9	38 . 36,2	+ 2	A very faint star +.
7		40 . 10,0		Stars hid by haze.
8	10	41 . 13	+ 10	A faint star +.
9	9	42 . 56,5	− 16	A faint star at − 6^r, cloudy till the next.
10	9,10	21 . 56 . 51,0	− 1	

The reading of the Hour Circle for determining the position of the Zone of Series I. was inadvertently omitted. It was noted, however, that the series commences at about 21^h of R.A.

The micrometer readings in both series of July 29, as set down, suppose the reading at the hole of the comb, which is near the middle of the field, to be 10^r, and the N°. of revolutions to increase towards the lower part of the field. They have all been diminished by 10^r, to make them agree with the mode of reading off subsequently adopted. The symbol + means, 'in the lower half of the field;' − 'in the upper half.'

The micrometer readings of N^{os}. 33 and 39, Series I, which are the same as N^{os}. 18 and 22 of Series II, should be increased by 10^r.

N°. 1, of Series II. is the same star as N°. 1, of Series I.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micrometer Reading.	Remarks.
		h. m. s.	r.	
11	9	21 . 57 . 36,5	− 4,5	
12	9	58 . 21,7	− 14,5	
13	9,10	58 . 57,1	− 12	
14	9,10	59 . 18,4	+ 4	
15	10,11	59 . 45,0	+ 3	
16	6	22 . 0 . 13,0	+ 15,6	A faint star at top of field.
17	10	1 . 1,6	+ 15	No stars visible.
18	8,9	2 . 14,8	+ 1	
19	10	4 . 12,0	+ 13,5	Two very faint − and +.
20	10	5 . 3,7	+ 16	
21	10	5 . 39,7	− 11	
22	9	6 . 4,0	+ 4	
23	10,11	6 . 46,0	+ 5	
24	8,9	7 . 0	− 5	
25	9	7 . 8,0	+ 17	A faint ✳ at + 4r.
26	10	8 . 29,0	− 14	
27	9	9 . 7,6	− 14,5	
28	9	9 . 49,2	− 14	
29	7,8	9 . 54,1	+ 15	
30	9,10	10 . 4,0	+ 8	
31	9	10 . 6,0	− 5	
32	10	11 . 14,0	− 10	
33	9	22 . 11 . 23,6	+ 12	

Series III. .... 1846. July 30.
Reading of Declination Rod. .... 102°. 57′.
Reading of Sector Microscope. .... $16^{d}.10^{r},37$.
Moveable index of Hour Circle. .... $21^{h}.31^{m}.10^{s}$.
Fixed index of Hour-Circle at $22^{h}.50^{m}.18^{s}$. by X. } .... $10^{h}.55^{m}.0^{s}$.
Chronometer X. $52^{s},1$ fast.
Instrument moving by the Clock; Telescope fixed in Declination.

No. of the Series.	Mag. of the Star.	Time by Chronometer X.	Hour-Circle Microscope Reading.	Micrometer Reading.	Remarks.
		h. m. s.	d. r.	r.	
1	9	21 . 0 . 10	42 . 1,1	− 12,6	
2	10	1 . 0	42 . 7,2	− 3	Three very faint +.
3	9,10	2 . 16	42 . 0,6	− 18	Three faint +.
4	9,10	21 . 3 . 53	40 . 5,4	+ 10	
5	9	21 . 4 . 27	40 . 5,0	+ 5,7	A small ✳ p 2s.
6	9,10	5 . 39	39 . 8,1	+ 5,7	Two faint +.
7	9,10	8 . 47	38 . 1,6	− 6,5	Another +.
8	10	9 . 29	37 . 7,9	− 1	
9	10	10 . 0	37 . 7,9	− 8	
10	10	10 . 51	37 . 8,3	+ 2½	
11	9,10	11 . 15	37 . 8,1	+ 12½	
12	9,10	12 . 46	36 . 5,0	− 4	
13	10	14 . 24	35 . 4,5	+ 12½	A faint star sf +.
14	9	16 . 0	34 . 2,4	+ 11,7	A small ✳ + 2r.
15	9,10	18 . 42	32 . 7,6	− 14	
16	10	19 . 18	32 . 7,2	+ 10,2	
17	9,10	19 . 54	32 . 5,4	+ 16	Only a small ✳ −, and another about + 16r.
18	9	23 . 6	29 . 7,3	+ 14,5	A small ✳ at bottom of field.
19	10	24 . 43	28 . 5,9	− 13	
20	9	25 . 18	28 . 5,7	− 17	
21	10,11	26 . 44	28 . 4,8	− ½	
22	10,11	27 . 32	27 . 9,3	− 7	
23	10,11	28 . 41	26 . 12,1	− 10½	
24	10	29 . 41	26 . 10,6	− 12,7	
25	10,11	30 . 47	26 . 4,2	− 5	
26	10	31 . 29	26 . 0,4	+ 16,3	One small ✳ − and three +.
27	10	21 . 33 . 47	25 . 2,6	− 13	
28	10	21 . 48 . 24	26 . 1,6	+ 7	
29	10,11	49 . 49	26 . 0,4	− 10,3	
30	9,10	50 . 32	25 . 6,3	+ 13	
31	10	51 . 20	25 . 1,2	− 4	
32	10,11	52 . 7	24 . 8,2	− 12,5	
33	10	52 . 43	24 . 7,5	+ 4,7	
34	10,11	53 . 29	24 . 5,5	+ 1	A small ✳ −.
35	10	54 . 30	23 . 8,1	+ 1	
36	9,10	55 . 11	23 . 5,8	+ 14	A small ✳ − 1r.
37	10	56 . 15	23 . 2,0	+ 15	
38	10	56 . 48	23 . 1,7	− 3,6	
39	10	57 . 30	23 . 0,0	− 14	Near this a small ✳ sf.
40	10,11	58 . 35	22 . 6,7	− 5,7	A small ✳ + 0r, another +.
41	9,10	59 . 58	22 . 1,8	+ 17	One coarsely double. Three very faint −.
42	10,11	22 . 1 . 50	20 . 7,4	− 1	No stars in field.
43	9,10	3 . 21	19 . 3,0	− 5,8	Two small stars +.
44	10	22 . 4 . 36	18 . 5,0	+ 2	A small ✳ −, another +, two others −.

The micrometer readings of N°. 30 of Series II. should probably be increased by 5r.

Series III.—The night of July 30 was favourable. The magnitudes are perhaps reckoned by rather too high numbers.

N°. 1. In the Hour-circle Microscope Reading, 42^{d} is most probably a mistake for 43^{d}.

Between N^{os}. 6 and 7 the tangent-screw of the Hour-Circle clamp was turned back, having reached its limit.

Between N^{os}. 27 and 28 the Clock was wound up. Before recommencing the observations, N°. 28 was ascertained to be the next star in succession to N°. 27.

No. of the Series.	Mag. of the Star.	Time by Chronometer X.	Hour-Circle Microscope Reading.	Micrometer Reading.	Remarks.
		h. m. s.	d. r.	r.	
45	10,11	22. 6. 1	17. 0,6	– 9	A fainter near it. Two small ✳s –.
46	9,10	22. 13. 49	16. 2,8	+ 9	
47	9,10	15. 25	16. 1,0	– 11,5	
48	10	16. 24	15. 7,5	– 13	
49	10	17. 1	15. 6,1	+ 2,4	No stars in field. Very faint ✳ –.
50	10	18. 19	14. 2,5	– 4	A much fainter. A small ✳ +, another –.
51	9,10	19. 51	13. 1,4	+ 11,6	
52	10	20. 45	13. 0,0	– 10,3	A faint ✳. Another +.
53	10,11	22. 1	11. 9,8	+ 5	
54	10	23. 6	11. 4,1	– 7	
55	10	23. 40	11. 3,9	+ 13	
56	9	24. 48	11. 2,3	+ 14,6	
57	10	25. 27	11. 1,9	– 13,6	
58	10	26. 27	10. 2,1	– 14,4	Several very faint –.
59	10,11	27. 54	9. 3,4	– 14	Three very small ✳s.
60	10	30. 33	7. 6,1	+ 4,6	
61	10	31. 8	7. 5,6	+ 11,0	
62	9,10	31. 38	7. 5,1	+ 17	
63	9,10	32. 23	7. 3,9	– 5,2	
64	10	33. 15	7. 1,2	+ 6,2	
65	9,10	34. 5	6. 1,4	+ 4,4	
66	10	34. 59	5. 5,7	– 10,6	Two very faint ✳s.
67	10,11	36. 10	4. 7,2	+ 17	Five small ✳s +, and one –.
68	9,10	22. 38. 35	0. 6,9	+ 1,7	

Series IV. .... 1846. August 4.
Reading of Declination Rod. .... 102°. 57′.
Moveable index of Hour Circle. ...... 21h. 1m. 20s.
Fixed index of Hour Circle at 21h. 18m. 15s X. } .... 9h. 17m. 30s.
Chronometer X. 56s,5 fast.
Instrument fixed; Telescope moved in Declination by the Sector screw.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Reading of Sector Microscope.	Remarks.
		h. m. s.	d. r.	
1	9,10	21. 25. 10,5	20. 11	
2	9	26. 16,2	24. 15	
3	9,10	21. 27. 18,0	26. 8	
4	9	21. 28. 35,5	23. 8½	
5	9,10	29. 40,2	21. 10	
6	9	30. 58,3	11. 5	
7	10	32. 42,1	12. 7½	
8	8	34. 0,2	14. 10¼	
9	9	35. 1,6	16. 0¾	
10	8,9	36. 16,1	25. 8½	
11	10	37. 21,6	24. 12	
12	6	39. 40,4	25. 9½	
13	9,10	41. 2,2	24. 10	
14	7	43. 11,2	4. 6½	
15	9	45. 1,2	11. 15	
16	9	47. 8,2	9. 6¾	
17	7	47. 54,4	15. 3	
18	10	49. 14,5	21. 0	Something passed, thought to be like a comet.
19	9	21. 51. 2,4	27. 10	

Series V. .... 1846. August 4.
Reading of Declination Rod .... 102°. 57′.
Moveable index of Hour-Circle ...... 20h. 57m. 40s.
Fixed index of Hour-Circle at 21h. 56m. 43s X. } .... 9h. 27m. 30s.
Chronometer X. 56s,5 fast.
Instrument fixed; Telescope moved in Declination by the Sector screw.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Reading of Sector Microscope.	Remarks.
		h. m. s.	r.	
1	9,10	21. 58. 27,0	27. 2	
2	9,10	59. 3,8	24. 18½	
3	9	59. 37,2	27. 9¾	
4	10	22. 0. 44,6	22. 0½	
5	9	2. 25,7	11. 9	
6	10	4. 48,7	14. 18½	
7	8,9	6. 9,4	15. 4½	
8	9	8. 34,2	6. 18	An equal ✳ *np*.
9	8	10. 52,6	5. 13	
10	9	12. 14,6	13. 12½	
11	7,8	22. 13. 50,1	23. 15	

Between Nos. 45 and 46 the Clock failed. More weights were consequently put into the pan to accelerate the motion. No. 46 was ascertained to be the next star in succession to No. 45.

The instrumental readings for the position of the zone were taken after the observation of No. 68, the instrument being still in motion. Hence they give roughly the place of this star.

Series IV. The instrumental readings, taken while the instrument was moving, give roughly the position of the beginning of the zone, the series commencing on stopping the clock.

Series V. The clock was set going after No. 19 of Series IV, to ascertain the nature of the object which attracted attention between Nos. 18 and 19 of that Series. The suspicion of a comet was not confirmed. The indices of the Hour-Circle were then read off, and a new series commenced on stopping the clock.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Reading of Sector Microscope.	Remarks.
		h. m. s.	d. r.	
12	10	22 . 15 . 30,6	20 . 6	
13	10	16 . 30,8	15 . 19½	
14	10,11	17 . 11,7	15 . 3½	
15	10	18 . 8,5	12 . 12¾	
16	9	19 . 13,3	10 . 16¼	
17	10	20 . 9,0	10 . 17¼	
18	9	22 . 29,7	13 . 4	Time doubtful.
19	10,11	23 . 18,0	17 . 9½	
20	9,10	24 . 23,5	15 . 6½	
21	10	27 . 13,1	5 . 9¼	
22	10,11	28 . 32,7	15 . 17½	
23	10	29 . 2,2	15 . 17½	
24	8,9	30 . 40,0	15 . 10½	
25	8	32 . 48,6	4 . 19	
26	6,7	34 . 52,2	4 . 2½	
27	9	22 . 38 . 45,0	16 . 3	

Reading of moveable index of Hour-Circle $20^h . 57^m . 40^s$.

Reading of fixed index at $22^h . 43^m . 55^s$ X. .... $9 . 31 . 40$.

Series VI. .... 1846. August 12.

Reading of Declination Rod. .... 102°. 57′.

Reading of Sector microscope .... $16^d . 10^r,37$.

Reading of moveable index of Hour-Circle $21^h . 31^m . 0^s$.

Reading of fixed index at $20^h . 33^m . 20^s$ X. .... $8^h . 32^m . 0^s$.

Chronometer X. $62^s,8$ fast.

Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micrometer Reading.	Remarks.
		h. m. s.	r.	
1	9,10	20 . 45 . 51,6	− 7	
2	9,10	45 . 59,6	+ 15	A smaller near.
3	10,11	46 . 53,0	+ 16	
4	10	47 . 25,0	+ 17	
5	9,10	47 . 59,5	− 16,5	
6	9,10	48 . 42,0		Nos. 6, 7, 8, and 9 were taken hurriedly, coming in too quick succession. Two were in the upper and two in the lower half of the field.
7	9,10	48 . 46,0		
8	9,10	20 . 48 . 56,0		
9	9	20 . 48 . 58,0		
10	9,10	50 . 7,0	− 10	
11	9	50 . 15,3	+ 10½	
12	10	51 . 3,3	− 6	
13	10	52 . 3	+ 1	
14	10	52 . 10	− 14	
15	9	52 . 24,2	− 13	
16	9	52 . 36,3	+ 12	
17	10,11	53 . 24,0	+ 8½	
18	10	54 . 25,0	+ 1	
19	10	54 . 59,7	− 7	
20	11	56 . 2,0	− 2	A ⚹ coarsely double.
21	9,10	57 . 3,8	+ 15,5	
22	10	57 . 27,7	− 7	
23		57 . 43,0		
24		57 . 52,0		A star came too quickly after No 24 to allow of being taken.
25	9	58 . 13,0	− 13	
26	9,10	58 . 24,0	− ½	
27	10,11	58 . 57,0	0	
28	9,10	59 . 7,0	+ 4	
29	10	59 . 24,0	− 5	
30	10	59 . 47,7	+ 13	
31	10	21 . 0 . 15	+ 8	
32	9,10	0 . 18,5	− 15	
33	10	0 . 55,0	+ 16	
34	10,11	1 . 12,4	− 5½	
35	10	1 . 42,3	− 14½	A fainter follows.
36	10,11	2 . 19,7	− 8	A very small ⚹ at − 1r.
37	10	2 . 51,0	− 14½	A brighter near at top of field.
38	9,10	21 . 3 . 42,3	+ 14¼	
39	9,10	22 . 20 . 29,1	+ 15	A very small ⚹ at − 15r; another at − 1r.
40	10	22 . 30	+ 16	
41	10	22 . 39	+ 11	
41*	10		− 15	
42	9,10	23 . 47	+ 12,5	
43	10,11	24 . 39	+ 13	
44	10	25 . 24,0	− 3	
45	9,10	26 . 21,3	+ 14	Four of nearly the same R.A.
46	10	26 . 40,0	− 7	A very small ⚹ at + 12r.
47	9,10	22 . 27 . 56,0	+ 6½	Two near each other of 10th mag.

Immediately after No. 27 of Series V., the Clock was set going, and the Hour-Circle indices were read off for the position of the end of the Series.

Series VI. No. 17. The sign of the micrometer reading should probably be −.

No. 25. The sign of the micrometer reading is doubtful.

After No. 38, it became cloudy and the Clock was set going. Light clouds remaining scattered about the heavens, it was thought best to suspend the observations. The night was unfavourable and the observations are not very satisfactory.

No. 39, the first star taken on resuming observations, is the same as No. 38 of the preceding set.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
48	9,10	22 . 28 . 26,0	+ 6½	
49	8	29 . 14,6	− 5,3	Called at first 8,9 mag.; altered at the time to 8 mag.
50	11		− 2	
51	9,10	30 . 21,0	− 13	Time doubtful.
52	10,11	32 . 34,0	+ 1½	Two very faint in middle of field: then three of 11th mag.
53	9,10	33 . 7,4	+ 14,5	
54	10,11	33 . 42,0	+ 5	
55	9	33 . 53,5	− 16	
56		34 . 25	− 8	A very faint star.
57	10,11	35 . 14,0	+ 13	
58	10,11	35 . 38,0	+ 10	Several very small ✳s.
59	10	36 . 1,4	− 12	
60	10	36 . 41,3	− 2½	A star coarsely double.
61	9,10	37 . 29,5	− 7	
62	9,10	37 . 43	+ 14	
63	9	38 . 8,5	0	Two of 11th mag.
64	9,10	39 . 55,0	+ 2,2	A faint star at 0r. Then two distant about 1′, the preceding of 10th mag.
65	9,10	41 . 16,6	+ 2	
66	9,10	42 . 36,5	− 7½	A triangle of stars; then a faint one at + 5r.
67	10,11	42 . 51,0	+ 2½	
68	9	43 . 54,7	+ 5	
69	9,10	44 . 19,5	− 3½	
70	9,10	45 . 2,0	+ 12	
71	10	45 . 51,7	+ 3	Three small stars of nearly the same R.A. Then field free from stars.
72	10,11	47 . 39,3	− 5½	Before this two small stars of nearly the same R.A.
73	11		+ 5	
74	10	49 . 10,2	− 3½	Two small ✳s high in the field.
75	9,10	49 . 38,6	+ 10	Has a fainter companion.
76	11		+ 12	
77	9	51 . 8,0	− 8	Not perhaps so bright as 9th mag.
78	9,10	51 . 21,6	− 10,5	A triangle of stars.
79	10	52 . 15,0	+ 8	
80	9,10	52 . 27,7	+ ½	
81	10	53 . 25,0	+ 3	A faint ✳ at + 6r.
82	10	54 . 9,6	− 11	
83	11		0	
84	9,10	55 . 5,5	+ 14¼	
85	10	55 . 26,7	− 8	Two of equal magnitude.
86	11		− 10	
87	9,10	57 . 11,0	− 4	
88	9	57 . 46,0	+ 13,3	Two very faint at − 4r.
89	10,11	22 . 59 . 28,0	+ 13	A fainter follows.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
90	9	23 . 0 . 32,7	+ 1½	No stars in field.
91	11		+ 3	
92	9,10	3 . 25,0	− 15,5	
93	11		+ 14	This ✳ very faint.
94	10,11	4 . 33,7	+ 8	
95	7	5 . 8,2	− 3½	A small star at − 10½r.
96	10,11	6 . 38,0	− 3½	Four of nearly the same R.A.
97	10	7 . 32,7	+ 1½	
98	9,10	7 . 52,0	+ 17¼	
99	10,11		+ 10	
100	11		+ 4½	
101	9	9 . 52,0	+ 10	The brightest of three.
102	11		− 3½	
103	10,11	11 . 49,2	− 2	
104	10,11	12 . 21,5	− 13	
105	10	12 . 32,7	− 4¾	No stars in field.
106	11		− 3	
107	11		− 9	
108	10	16 . 26,7	+ 8	
109	10	16 . 54,8	+ 1½	
110	7	17 . 51,8	+ 2	
111	11		+ 13	Three near each other.
112	9,10	19 . 50,6	+ 10¼	
113	11		+ 6	The following of two small stars.
114	11		+ 13	
115	10	23 . 21 . 52,2	+ 6½	

Series VII.................. 1846. September 28.
Reading of Declination Rod............... 102°. 0′.
Reading of Sector Microscope............. 26d. 0r.
Moveable index of Hour-Circle....... 21h. 12m. 30s.
Fixed index of Hour-Circle at 22h. 55m. 10s X. } .... 10h. 53m. 40s.
Chronometer X. 1m. 33s,8 fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
1	11	22 . 57 . 19,5	0	
2	11	57 . 29,2	− 3½	
3	11	58 . 16,2	− 2	
4	11	22 . 58 . 38,0	+ 9	

N°. 61, micrometer reading doubtful, perhaps wrong in sign.

After N°. 115 it became cloudy.

Series VII. The instrumental readings give roughly the R.A. and N.P.D. of the middle of the field at the beginning of the Series.

In the Remarks of Series VII, the letters *p*, *f*, *n*, *s*, mean *preceding*, *following*, *north*, *south*.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.	No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.				h. m. s.	r.	
5	11	22 . 58 . 51,0	− 5		47	10	23 . 23 . 23,2	− 3	A much fainter *np* distant.
6	11	22 . 59 . 22,0	− 16½		48	10	23 . 56,8	− 12	A much fainter *nf* distant.
7	10	23 . 0 . 4,2	+ 9½		49	10,11	24 . 44,3	− 2¼	Two of nearly same R.A. *n*.
8	9	0 . 13,0	− 17½		50	11	25 . 39,0	+ 16½	
9	11	0 . 45,0	− 4¾		51	11	26 . 21,5	+ 12	
10	11	1 . 20,0	+ 7	A small ⚹ at − 1r.	52	10,11	26 . 27,8	− 1¾	
11	10,11	1 . 53,7	+ 6	No stars in field.	53	11	26 . 56,0	− 1	
12	9,10	3 . 1,7	− 12		54	10,11	27 . 57,7	+ 11¾	A fainter *sf* distant.
13	10,11	3 . 52,0	+ 12	A small ⚹ at − 4r, another at + 4½r.	55	11	28 . 43,0	+ 16½	
14	9	4 . 37,2	+ 8		56	10	28 . 50,2	− 1½	
15	11	5 . 0,5	− 13½		57	10,11	30 . 26,0	+ 4	A smaller *nf* near.
16	11	5 . 8,7	+ 3		58	10,11	30 . 42,2	+ 6½	
17	11	5 . 30,0	+ 10½	A group *s* passed at same time.	59	10,11	30 . 48,5	+ 14	
18	11	5 . 47,0	− 11		60	8,9	31 . 38,2	− 13¼	A fainter *p* close.
19	10	6 . 23,9	+ 8½		61	11	32 . 18,3	− 9	
20	11	8 . 1,0	− 4	A small star at − 1r.	62	10	32 . 34,1	− 14	
21	9,10	8 . 7,7	+ 4¾		63	10,11	32 . 42,0	− 1¼	A fainter *nf* near.
22	11	8 . 20,3	+ ½		64	10,11	33 . 1,0	+ 13	A close double.
23	11	8 . 41,6	+ 9¼		65	11	34 . 17,0	+ 9	
24	10,11	8 . 53,0	+ 6¾		66	11	34 . 43,3	+ 12	
25	11	9 . 28,0	+ 5		67	10	34 . 58,0	+ 2¼	
26	10,11	10 . 14,2	+ 12¼		68	9	35 . 12,0	− 17½	
27	11	10 . 43,0	− ½		69		35 . 37,0	+ 5	
28	10,11	11 . 9,0	+ 1		70	10,11	35 . 45,0	+ 16¾	
29	11	11 . 51,5	+ 17	A fainter *sp* distant.	71	11	36 . 28,2	− 3	The middle of three in a line.
30	11	13 . 34,0	+ 4	No stars. A fainter *sp* near.	72	11	36 . 40,0	− 14	
31	11	13 . 58,0	− 6¾		73	11	37 . 28,7	− 2	A small star at + 1r.
32	10,11	14 . 11,0	+ 6¾	? 16r.	74	11	38 . 33,0	+ 2½	
33	11	14 . 24,0	+ 8½		75	10,11	40 . 0,2	− 10¾	A fainter *sf* distant.
34	11	14 . 45,0	+ 9	A fainter *sp* near.	76	11	40 . 44,0	+ 8½	
35	11	15 . 39,0	+ 13		77	11	41 . 6,2	+ 1	
36	11	16 . 5,0	− 2		78	11	41 . 18,0	− 17	
37	10,11	17 . 7,0	− 4	A small ⚹ − 11r; another + 5r. A much fainter *np* near.	79	10	41 . 32,2	+ 17	A fainter *sf* near.
38	10	19 . 3,0	+ 3	A smaller, same R.A. *s* near.	80	10	42 . 32,4	− 4½	
39	10,11	19 . 17,0	− 12		81	10	42 . 32,4	− 13½	
40	11		+ 10	Of nearly the same R.A. as the preceding.	82	11	43 . 52,0	− 16	A faint ⚹ at + 10½r.
41	11	20 . 26,2	+ 13		83	10,11	44 . 8,0	+ 7	
42	11	20 . 44,6	+ 12		84	10	44 . 45,3	0	
43	10,11	20 . 52,2	− 4¾		85	10	44 . 56,0	− ¼	
44	10	21 . 13,0	− 8¼		86	10,11	45 . 22,0	− 9	
45	11	22 . 28,0	− 17		87	11	45 . 45,0	+ 1½	
46	10	23 . 22 . 49,2	− 16	A faint ⚹ *f* at − 10r.	88	11	23 . 46 . 21,0	− 13	

Nos. 80 and 81 were noticed to have the same R.A. After No. 88, the Telescope was moved in Declination to take a bright star to serve for fixing the position of the zone. The star was of 5,6 mag. The time of its transit by X was, $23^h.47^m.17^s,0$ and the sector reading, $20^d.11^r,30$.

Series VIII. .... 1846. September 28.
Reading of Declination Rod. .... 102°. 0′.
Reading of Sector Microscope............. $18^d.10^r$.
Moveable index of Hour-Circle. ...... $21^h.45^m.0^s$.
Fixed index of Hour-Circle at $23^h.51^m.34^s$ X. .... $11^h.50^m.0^s$.
Chronometer X. $1^m.34^s$ fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
1	10	23 . 53 . 52,0	−9	
2	10,11	54 . 0,0	+14	
3	11	54 . 12,3	+16½	
4	11	55 . 12,7	+10	
5	10,11	55 . 25,2	−10	A star passed at −16r.
6	11	55 . 47,2	+6	Two of nearly same R.A. 11 mag.
7	11	56 . 30,0	−16½	Another of same R.A. at +3½r.
8	11	56 . 54,1	−1	
9	11	57 . 18,0	+15¼	
10	11	57 . 29,0	+7	
11	10,11	57 . 39,0	+14	
12	11	58 . 34,0	−8	A faint ✳ at +8r.
13	10	58 . 41,0	−15	A faint ✳ at −8r.
14	11	59 . 47,0	+11½	
15	11	59 . 59,0	0	A fainter *f* near.
16	10,11	0 . 0 . 45,2	+2	
17	11	1 . 15,0	−5	Two small stars.
18	10	1 . 32,3	+13½	
19	9	1 . 52,0	+10	Two of 10,11 mag. *nf* and *sf*.
20	10	2 . 25,8	+4	A fainter *np* distant.
21	10,11	3 . 8,0	+9¾	One of same R.A. *s* near.
22	11	3 . 22,7	−2½	
23	10	3 . 49,1	−4¼	
24	10	4 . 9,5	+4	
25	9,10	4 . 23,0	−2¾	
26	10	5 . 10,3	−5¼	One of nearly same R.A. and 10th mag. passed at +16.
27	10	5 . 14,5	−13	
28	9,10	5 . 36,3	+10½	
29	10	5 . 54,0	+1½	
30	10,11	7 . 38,7	−17	
31	10	7 . 49,0	+11	A ✳ of 11th mag. passed.
32	11	8 . 39,0	−4	
33	10,11	8 . 57,0	+8	
34	10	0 . 9 . 12,8	+1¼	
35	10,11		−7½	
36	11	0 . 10 . 10,5	+7	
37	11	10 . 21,0	+5	
38	10,11	10 . 40,7	−17½	
39	10,11	11 . 18,2	+17	
40	11	13 . 35,0	−4	
41	10	13 . 48,0	+8½	
42	11	14 . 10,0	+9	
43	11	14 . 57,8	−9	A fainter *nf* distant.
44	11	15 . 28,5	+17	A small ✳ at −2r; another at +13r.
45	10	15 . 57,0	−10	
46	11	17 . 59,2	−1½	A small ✳ *f* distant.
47	10,11	18 . 14,0	+15½	
48	10,11	18 . 35,2	+15	
49	10,11	18 . 55,6	+13¼	The brightest and middle of three nearly in a line.
50	11	19 . 14,5	+¾	
51	11	20 . 11,0	+15½	
52	11	21 . 3,3	+16½	
53	11	21 . 43,0	−2	
54	10,11	22 . 28,5	+11	A faint ✳ at 0r.
55	11	22 . 47,3	−½	
56	11	23 . 40,7	−6½	
57	11	23 . 54,0	−4	
58	11	24 . 37,0	+7	
59	10	24 . 47,5	+16	One of nearly same R.A. at −15r.
60	9	26 . 0,0	+9	
61	11		+3	
62	10,11	26 . 53,0	−2¾	
63	9	28 . 0,4	+16½	
64	11	28 . 53,0	+8½	
65	10,11	29 . 5,2	−8	
66	9,10	29 . 42,7	+14	One of 11th mag. *sp* near.
67	10	30 . 34,7	+2½	
68	11	31 . 30,0	+5¾	
69	11	31 . 55,0	+12½	A fainter *np* near.
70	11	32 . 49,2	−3	The most southern of three in a straight line.
71	11	33 . 19,0	−8½	
72	11	33 . 56,0	−16½	Another of same R.A. *n* distant.
73	10,11	34 . 29,8	−½	The south star of a Δ.
74	10,11	34 . 53,8	+¼	
75	11	35 . 31,0	+1	
76	9,10	35 . 50,0	+8	
77	10	36 . 2,0	+10¾	
78	10,11	0 . 36 . 9,0	+11	

Series VIII. Between N^{os}. 39 and 40 the Telescope was moved in declination to take a bright star for point of reference of the zone, and was then restored exactly to its former position by means of the Sector Microscope. The time of Transit for the star was $0^h.11^m.45^s,8$ and the Sector reading $20^d.9^r,46$.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micrometer Reading.	Remarks.
		h. m. s.	r.	
79	11	0 . 36 . 47,2	− 12	A double ✳. Another of same R.A. +.
80	11	37 . 34,0	− 4	
81	11	37 . 46,0	− 12½	
82	10	38 . 43,7	− 9¼	
83	10,11	39 . 49,0	− 1½	An equal ✳ of same R.A. *s* and near.
84	10,11	41 . 0,0	+ 10	
85	10,11	41 . 27,7	+ 10¾	
86	11	42 . 11,0	+ 9¼	A faint companion *np*.
87	11	42 . 44,0	+ 1½	
88	11	42 . 51,0	+ 14½	One passed at + 13½ʳ.
89	11	43 . 47,2	+ 15	
90	11	43 . 59,0	+ 13	
91	10	44 . 13,0	− 8½	
92	11	44 . 38,6	+ 8½	
93	10	45 . 4,0	− 17	One of same R.A. *s* mag. 10,11.
94	11	45 . 26,3	− 4	
95	11	45 . 45,0	+ 6	
96	10,11	45 . 55,2	− 11	
97	11	46 . 34,0	− 11	A faint ✳ at + 2½ʳ.
98	11	46 . 51,0	− 7¼	
99	11	47 . 34,0	+ 4	
100	11	47 . 58,0	− 6	
101	10	48 . 40,0	+ 6	*np* of a double star.
102	10	48 . 57,8	− 2	Some of 11th mag. passed.
103	11	49 . 50,0	+ 2	
104	11	50 . 24,2	+ 2¾	Several faint stars near this.
105	7	50 . 41,8	+ 10	One of 11th mag. passed.
106	10,11	51 . 6,5	− 12½	
107	10,11	52 . 9,3	− 1	An equal ✳ near.
108	10,11	52 . 20,0	+ 8½	
109	10	52 . 27,0	+ 9¼	
110	10,11	52 . 34,0	+ 10½	
111	11	53 . 27,0	+ 6	
112	11	53 . 53,2	− 8	
113	10,11	54 . 8,2	+ 9¾	
114	11	54 . 50,4	+ 6	
115	10,11	55 . 13,0	+ 15¾	
116	10	55 . 49,0	+ 17½	
117	10	56 . 0,0	− 5	A star of 10th mag. passed near top of field; another small ✳ at + 15½ʳ.
118	10,11	57 . 12,5	− 9	
119	10,11	57 . 41,2	+ 5	
120	10,11	0 . 57 . 56,7	+ 14¼	

Series IX.................. 1846. September 29.
Reading of Declination Rod................103°. 0′.
Reading of Sector Microscope. .... 26ᵈ. 0ʳ.
Moveable index of Hour-Circle. ...... 21ʰ. 30ᵐ. 0ˢ.
Fixed index of Hour-Circle at 21ʰ. 13ᵐ. 56ˢ X. .... 9ʰ. 12ᵐ. 30ˢ.
Chronometer X. 1ᵐ. 34ˢ fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micrometer Reading.	Remarks.
		h. m. s.	r.	
1	11	21 . 15 . 32,3	− 1¼	
2	10,11	15 . 54,0	− 6	
3	11	16 . 52,7	+ 3	
4	11	17 . 24,6	− 6¼	
5	11	17 . 45,7	+ 16½	
6	10,11	18 . 29,2	− 12¾	
7	10,11	19 . 10,0	+ 16	
8	11	19 . 28,0	− 9¼	A fainter *sp* close. A ✳ of 10,11 mag. passed.
9	10,11	19 . 34,0	− 7¼	
10	11	20 . 16,2	+ 15	
11	11	20 . 49,0	− 6	
12	11	21 . 4,0	− 8	
13	11	21 . 9,5	− 13	A star passed at − 8ʳ.
14	11	21 . 48,6	− 2	
15	11	22 . 35,0	− 7¼	
16	11	22 . 49,0	− 13	
17	11	23 . 15,0	+ 14¾	
18	10	24 . 18,5	+ 1	
19	10,11	24 . 53,5	− 17½	
20	11	25 . 46,4	− 12	
21	11		+ 11	Of nearly the same R.A. as the preceding.
22	10	26 . 41,0	− 2½	A smaller of nearly the same R.A. *n* distant.
23	11	28 . 24,0	+ 18	
24	11	28 . 46,8	− 3½	
25	9	29 . 46,2	− 15¼	
26	10,11	29 . 57,0	− 3	
27	10		+ 16	Of nearly the same R.A. as the preceding.
28	10	30 . 40,3	− ½	
29	10	30 . 56,3	+ 9	
30	9	31 . 42,0	+ 4½	
31	11	32 . 59,0	+ 5	
32	10,11	33 . 14,2	− 1½	
33	10	21 . 33 . 23,0	+ 11	

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
34	9		− 18	
35	9	21 . 34 . 49,0	− 6	
36	9,10	36 . 10,5	− 16	
37	9	37 . 16,8	+ 7½	
38	9,10		− 10½	
39	10,11	37 . 44,2	+ 16½	
40	9,10	37 . 55,5	+ 10¼	
41	11	38 . 44,0	+ 2	
42	11	39 . 14,5	− 12	A smaller *nf* close.
43	10,11	40 . 21,2	+ 15	An equal ✳ *n* near.
44	10,11	40 . 59,0	+ 13½	
45	11	42 . 0,0	+ 5	
46	11	42 . 29,0	+ 4½	
47	10	42 . 36,8	+ 5¼	
48	11	42 . 56,0	+ 5	
49	11	44 . 6,2	− 6	
50	10,11	44 . 42,5	+ 5½	
51	10,11	45 . 27,2	+ 13¾	
52	10	46 . 5,2	− 11	Two very faint stars near this.
53	10	46 . 26,3	− 15	
54	10,11	48 . 5,6	+ 2¼	{ A fainter of nearly the same R.A. *s* distant.
55	11	49 . 4,8	+ 6	An equal ✳ *np* distant.
56	11	50 . 33,7	− 10½	
57	11	51 . 1,0	− 13½	A fainter *p* distant.
58	11	51 . 58,5	− 9	
59	11	52 . 13,1	− 5	
60	11	52 . 34,0	− 3	
61	11	53 . 15,0	− 11½	
62	11	53 . 23,0	− 2½	
63	5	53 . 43,4	+ 5¾	
64	10,11	55 . 10,5	− 16	
65	11	55 . 23,0	− 5	
66	11	56 . 2,0	− 5	
67	10,11	56 . 46,2	− 6¼	
68	11	57 . 5,0	+ 17	
69	10,11	58 . 23,0	− 14	
70	10,11	58 . 46,2	+ 4½	
71	11	58 . 54,0	+ 12	A faint ✳ at -9^{r}; another at $+5^{r}$.
72	11	22 . 0 . 48,0	+ 6½	
73	10,11	1 . 49,0	− 18	
74	10,11	2 . 12,0	+ 8	The micrometer reading doubtful.
75	11	2 . 21,0	− 3½	
76	9	3 . 5,5	+ 9¼	
77	11	4 . 4,0	− 15½	
78	11	22 . 4 . 29,0	− 16	A fainter *np* distant.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks
		h. m. s.	r.	
79	10,11	22 . 4 . 49,5	+ 15	
80	11	5 . 36,7	+ 5	
81	10	5 . 48,7	− 15¼	
82	6	6 . 58,0	− 16½	
83	11	7 . 49,0	− 13	
84	11		− 1	{ Of nearly the same R.A. as the preceding.
85	11	9 . 9,3	− 3	One of same R.A. *n* near.
86	11	9 . 42,0	+ 17¾	
87	10,11	10 . 5,0	− 10	
88	11	11 . 18,7	+ 16	
89	10	12 . 35,0	− 12¾	
90	9	12 . 46,6	− 9¼	
91	8	14 . 5,0	− 15	
92	10	14 . 24,5	− 17	
93	10,11	14 . 48,3	− 2	
94	10	15 . 9,7	+ 8¾	
95	11	22 . 15 . 27,2	− 10½	

Series X. ....1846. September 29.
Reading of Declination Rod...............103° . 0′.
Reading of Sector Microscope. ....23^{d} . 10^{r}.
Moveable index of Hour-Circle. ...... 21^{h} . 30^{m} . 0^{s}.
Fixed index of Hour-Circle at 22^{h} . 21^{m} . 25^{s} X. }......... 10^{h} . 20^{m} . 0^{s}.
Chronometer X. 1^{m} . 34^{s} fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
1	11	22 . 22 . 15,7	− 2	
2	11	23 . 17,5	− 2½	A fainter passed at -16^{r}.
3	11	23 . 31,5	− 5	
4	11	23 . 47,0	− 5½	
5	11	23 . 53,2	+ 3¾	
6	11	24 . 59,2	− 14	
7	11		+ 5¾	
8	11	26 . 3,2	− 2½	
9	10,11	26 . 23,8	− 13¾	
10	11	27 . 16,0	+ 2½	
11	9,10	27 . 28,2	+ 6¼	A small ✳ at -2^{r}.
12	11	28 . 47,0	+ 9	
13	6,7	29 . 24,4	− ½	
14	11		− 5½	
15	11	22 . 30 . 29,2	− 15	

Series IX. N°. 63 is the star employed for determining the position of the zone.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
16	10	22 . 31 . 9,2	− 3½	
17	11	31 . 42,0	− 2	An equal ⚹ *sf* distant.
18	11	32 . 48,2	+ 17½	
19	11	33 . 12,0	+ 13	
20	11	33 . 32,0	+ 6	
21	6,7	33 . 45,0	+ 10	A very faint ⚹ *s* near.
22	11	34 . 23,0	+ 3½	
23	11	35 . 38,0	− 11	
24	10,11	35 . 43,2	− 6½	One of nearly the same R.A. + 12ʳ.
25	11	37 . 13,5	− 12	An equal ⚹ *sp* near.
26	11	39 . 12,5	+ 6	
27	11	40 . 2,3	− 9	A fainter of nearly the same R.A. *n* near.
28	10,11	40 . 37,4	− 18	
29	10,11	41 . 24,2	+ 6½	
30	8,9	42 . 29,0	+ 18½	
31	11	43 . 53,2	+ 5¾	
32	10	44 . 11,2	+ 10¼	
33	11	44 . 39,0	+ 2	
34	10	44 . 58,2	− 13	A fainter *np* near.
35	8,9	45 . 9,0	+ 7½	Seemed to have a disk.
36	11	46 . 52,0	+ 16	
37	10,11	47 . 35,3	− 14	An equal ⚹ *nf* close.
38	11	48 . 6,0	+ 13	One passed of same R.A. − 7ʳ.
39	10,11	48 . 11,0	+ 17	
40	10,11	48 . 49,0	+ 2½	
41	10	48 . 53,0	+ 12	
42	11	49 . 58,5	+ 11	
43	10	50 . 30,2	− 3¼	
44	10,11	51 . 39,1	+ 12½	
45	11		− 7	Of nearly the same R.A. as the preceding.
46	11	52 25,4	+ 11	
47	10,11	52 . 41,5	− 15½	
48	11	53 . 9,5	+ 16	
49	10	53 . 28,3	− 3	
50	11		+ 17	
51	11	55 . 46,0	+ 6	
52	11	56 . 15,2	− 17	
53	11	56 . 23,0	− ¾	A faint star at + 8½ʳ.
54	11	57 . 3,0	− 9	
55	11	57 . 23,0	+ 16¼	
56	9,10	57 . 56,2	+ 5½	
57	10,11	58 . 56,0	− 7½	
58	10	59 . 28,0	− 3¾	
59	10	22 . 59 . 59,3	+ 12½	

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
60	10	23 . 1 . 44,2	− 8	
61	11	2 . 20,0	0	
62	11	3 . 1,0	+ 2	
63	11	3 . 11,5	+ 10	
64	10,11	3 . 26,5	− 7½	A fainter *sp* near.
65	10,11	4 . 12,0	+ 16	
66	10,11	4 . 19,2	− 12	
67	11	4 . 56,2	− 8	
68	11	5 . 22,3	+ 9	
69	9,10	5 . 49,0	+ 17	
70	11	6 . 1,0	+ 6	
71	11	6 . 20,7	+ 15	A very faint ⚹ at − 6ʳ.
72	11	7 . 16,0	+ 6	
73	11	7 . 20,5	− 4½	
74	10,11	7 . 56,2	− 6	A very faint ⚹ at − 11½ʳ.
75	10,11	8 . 39,0	− 9	
76	11	9 . 20,5	+ 8	One passed at − 8½ʳ.
77	10,11	9 . 34,0	+ 6	
78	11	11 . 3,2	− 3½	A faint ⚹ *np* distant.
79	11	11 . 43,0	− 11	
80	10,11	11 . 50,1	+ 13	
81	10,11	12 . 3,0	− 14	
82	10,11	12 . 18,2	+ 11½	
83	11	15 . 14,0	− 1¾	
84	10,11	15 . 50,0	+ 14	
85	11	16 . 31,0	+ 15½	
86	11	16 . 38,0	+ 8	
87	11	16 . 56,0	− 12	
88	11	17 . 6,0	+ 12	
89	11	17 . 41,0	+ 15	One of 11th mag. −.
90	11	17 . 52,0	+ 15½	
91	10	18 . 3,2	− 10	
92	10	18 . 15,5	+ 5	
93	11	18 . 33,3	− 14	
94	11	19 . 2,0	+ 11	
95	11	19 . 54,0	− 9	
96	10,11	20 . 20,2	− 10¼	
97	9,10	20 . 32,2	+ 13¼	
98	11	22 . 6,5	+ 9¾	
99	11		+ 11½	
100	11	22 . 53,0	− 10	
101	8	23 . 45,2	+ 16½	A close double.
102	9	25 . 37,0	+ 13	
103	10,11	23 . 25 . 45,2	+ 17	

Series X. After N°. 103 the Telescope was moved in declination to take a bright star for the purpose of determining the position of the zone. The time of Transit of the star was $23^h . 26^m . 46^s,8$ and the sector reading $21^d . 7^r,82$.

Series XI. ....1846. September 29.
Reading of Declination Rod................103°. 0′.
Reading of Sector Microscope .... 21ᵈ. 0ʳ.
Moveable index of Hour-Circle. ...... $21^h.30^m.0^s$.
Fixed index of Hour-Circle at $23^h.31^m.0^s$ X. .... $11^h.30^m.0^s$.
Chronometer X. $1^m.34^s$ fast.
Telescope fixed.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
1	11	23.32.59,5	+13	
2		33.47,0	+10¼	
3	9	33.55,8	+8	
4	11		−5	After this two small stars at +9ʳ and −4ʳ.
5	11	34.51,0	−13	
6	10,11	36.46,6	−9	
7	11	37. 5,0	+1½	
8	11	37.23,0	+5	
9	11	37.57,0	−4	
10	11		−1¾	
11	10,11	38.59,0	+15	
12	11	39.10,0	+8	
13	10,11	39.36,0	−5	
14	11	40. 9,2	−3¾	
15	7,8	40.36,6	+10½	
16	10,11	41.13,5	+13	
17	11	41.19,0	+14	
18	11	41.29,0	+13	A small ⚹ *nf* close. Several passed of 11th mag.
19	9,10	41.59,0	+15½	A faint ⚹ at +12ʳ; another at +10ʳ.
20	11	42.34,5	+7	
21	11	43. 4,0	−10½	
22	11	43.12,0	+5	
23	11	43.44,0	0	
24	10,11	43.56,0	+16½	A fainter near. N.P.D. doubtful.
25	6	44. 0,0	−17½	A small ⚹ at −16ʳ.
26	11	46.50,0	+10	One of same R.A. *n* near.
27	11	47. 4,5	−3½	
28	10,11	47.31,2	+14½	
29	11	48. 3,0	+15	
30	11	48.17,3	+15	
31	11	49. 8,0	+16	
32	11	49.29,2	−½	
33	10	49.46,1	+4¼	
34	10,11	50. 7,0	+2½	
35	10,11	23.50.29,0	+5½	
36	11		+18½	

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
37	11	23.51.35,0	−5½	A fainter of same R.A. +12ʳ.
38	11	52.16,0	+3	
39	7,8	52.45,5	−9½	
40	10	54.27,0	−17½	
41	11	56.52,0	−¼	Another of nearly the same R.A. *n* distant.
42	11	57.25,2	+9	
43	11	58.26,2	−10	An equal ⚹ *sp* near.
44	10,11	58.34,8	+10	
45	10,11	58.54,5	−3½	
46	10,11	59. 9,0	−15	
47	11	23.59.29,4	+4¾	
48	11	0. 0.14,0	−17	
49	10	0.30,3	+11½	
50	10,11	1. 1,4	+9¾	The *np* of a double ⚹.
51	10,11	1.36,0	+½	A fainter *sf* distant.
52	10,11	1.54,5	−15	A faint ⚹ at +7½ʳ.
53	11	2.42,0	−17	
54	11	3.25,7	−12	
55	10,11	3.46,2	−10	A fainter of same R.A. *n* distant.
56	11	4.39,0	−5	
57	11		+14	
58	11	5. 1,0	+7	
59	10	5.48,2	−½	
60	10	6.54,2	−3	A faint ⚹ at +10ʳ.
61	11	7.39,0	−11	
62	11	8.35,0	−5	
63	10,11	10. 9,4	+13	
64	10,11	10.15,0	−15	
65	11	10.40,0	+6	Several small stars.
66	11	10.53,0	+13½	
67	10,11	11.30,3	+10	A smaller *nf* near.
68	11		−17	
69	11	14.17,5	+½	
70	10,11	14.28,3	−11½	
71	10,11	14.33,0	+5	
72	10,11	15.55,0	+17½	
73	10,11	16. 4,8	−10½	
74	9,10	16. 8,5	+6	
75	10,11	16.15,5	+16	Two of 11th mag. passed.
76	11	18.46,3	+17	
77	10,11	20.41,2	+6½	A fainter *f*.
78	11		−10	
79	11	21.40,0	+11	
80	11	0.22. 6,0	−13	

Series XI. At the end of the Series the Telescope was moved in declination for the purpose of taking a bright star to serve for fixing the position of the zone. The star passed at $0^h.37^m.1{,}8^s$ X, and the Sector Reading was 21ᵈ. 3,59ʳ.

No. of the Series.	Mag. of the Star.	Time of Transit by Chronometer X.	Micro-meter Reading.	Remarks.
		h. m. s.	r.	
81	10,11	0 . 22 . 16,5	+ 8½	
82	11	22 . 35,0	– 16	
83	10,11	23 . 33,7	+ 12½	
84	11	25 . 10,0	– 8	
85	11	26 . 6,2	– 13	
86	11	26 . 12,5	+ 2	
87	11	26 . 47,0	– 12	
88	11	27 . 22,0	– 15	
89	11	29 . 18,0	– 16	
90	11	29 . 30,0	+ 16½	
91	11	0 . 29 . 52,0	– 6	
92	10	0 . 30 . 48,2	– 14¼	
93	11	31 . 29,2	+ 4	
94	11	32 . 19,2	0	A small star at – 5r.
95	10,11	33 . 47,0	– 8	
96	8	34 . 1,0	– 11	A double ✳.
97	11	34 . 44,7	+ 13½	
98	11	35 . 12,0	– 3	
99	9,10	35 . 52,5	– 15	Near each of these a faint ✳.
100	10	36 . 2,0	+ 4½	Near each of these a faint ✳.
101	11	0 . 36 . 32,0	– 5	

EXPLANATION OF THE FOREGOING OBSERVATIONS.

In all the observations the micrometer eye-piece was used with a magnifying power of 166. The stars taken are all such as admitted of illumination enough for satisfactory transits or bisections. The smallest that could be taken on a favourable night are estimated to be of the 11th magnitude. The observations were made in three different ways.

(1) With Telescope fixed. In this method the Telescope was absolutely fixed during the whole of a series. The transits were taken at the toothed border of the comb, which was ascertained to be straight, and which, after being adjusted equatoreally was turned by the position circle through 90°. For the sake of expedition, and to include a greater number of small stars, the fine micrometer wire was not used, the integral number of revolutions of the micrometer, and estimated parts of a revolution to a fourth, and sometimes to a tenth, being taken by means of the teeth of the comb. An assistant counted seconds from a chronometer and recorded the observations, whilst I gave out the time of transit, micrometer reading, magnitude of the star, and occasional remarks. This mode of observing is employed on July 29, Aug. 12, Sep. 28 and Sep. 29.

(2) With Telescope moved only in Declination. In this case the transit was taken at the toothed border of the comb as in the first method, the star was bisected by the micrometer wire retaining a fixed position in the field, the Telescope was moved in declination by the Sector screw, and the Sector microscope was read off. The brighter stars were taken here and there, to be reference points for the zone-observations. This method was employed on August 4.

(3) With Telescope moved only in Right Ascension. The Telescope and Polar Frame were carried by Clock-movement regulated approximately to sidereal time. By the Hour-Circle tangent-screw and a Hook's joint and handle, the observer turned the Polar Frame and Telescope relatively to the Hour-Circle, and thus brought the star at his leisure to be bisected by the toothed border of the comb. One assistant counted from a chronometer and recorded the observations, another read the Hour-Circle Microscope, and the observer gave out the time of bisection, the micrometer reading as in the first method, and the magnitude of the star. A small arc graduated at equal intervals was clamped to the Hour-Circle, and was read off in integral intervals, and parts of an interval expressed in revolutions of the micrometer-microscope, precisely as the Sector-arc is read off for differences of declination. This method of observing was employed on July 30.

It is clear that by this third method all stars to the 11th magnitude might be taken on a clear night without allowing any to pass. It was proposed to go over in this manner ground that had been gone over by the first method. Thus stars necessarily escaping in the first method would be recorded in the other, and at the same time the differences of R.A. given by the first method would always furnish the means of ascertaining the rate of the Clock. It was desirable to keep the clock-movement pretty uniform, and on this account to regulate the weight which, acting by pulley on the Polar Frame, gives assistance to the Clock. For want of such adjustment of the weight, the Clock began to fail between Nos. 45 and 46 on July 30.

The reading of the Hour-Circle Microscope is greater the greater the R.A. of the object, as the reading of the Sector Microscope is greater the greater the N.P.D. of the object. It follows therefore, that on July 30, the Telescope was continually turned to positions of *less* R.A. This was done because it was found that when the Telescope was turned the contrary way the going of the Clock was affected.

The instrumental readings at the commencement of each series were intended to give

the means of finding the position of the zone with sufficient precision to identify some known star or stars in the series, by means of which the limits of the zone might be accurately defined. The N.P.D. of the point of the heavens to which the axis of the Telescope is directed is given approximately by the reading of the declination rod, when the reading of the Sector Microscope is $15^d.18^r$.

Respecting the printed observations it is proper to remark that in the columns headed 'Micrometer Reading' and elsewhere, + means in the lower half of the field, and consequently corresponds to a *less* N.P.D. than the zero reading, and – to a greater N.P.D. than the zero reading. With reference to the 'Remarks' it should be noticed that when the Remark is printed opposite to the line in which the observation is recorded it has some immediate reference to the observation, but when printed opposite the space between two lines it relates to circumstances occurring in order of time between the observations recorded in those lines.

The following are the values of the intervals between the Sector divisions, and the values of the micrometer revolutions. The letter d is used to denote the interval between two consecutive divisions either of the Sector arc, or Hour-Circle arc, and the letter r to denote a Micrometer revolution.

1^d of Hour-Circle arc	$= 39^s{,}956$.
1^r of Hour-Circle Microscope-Micrometer	$= 4^s{,}123$.
1^d of Sector arc	$= 204'',72$.
1^r of Sector Microscope-Micrometer	$= 10'',19$.
1^r of the Eye-piece Micrometer	$= 16'',97$.

The above explanations may suffice for understanding the methods of observing and the calculations that follow. For more complete information, the 'Description of the Northumberland Telescope' added as an appendix to this Volume, had better be consulted.

Calculation of Results from the Observations.

It will be first necessary to identify some known star or stars in each series for the purpose of ascertaining the limits of the zones. This may be done by means of data in the notes, and by the instrumental readings at the head of each series, the latter applying to the point of the heavens to which the Telescope was directed on commencing the observations, and therefore roughly to the first star of the series. Let it be required, for example, to identify the star N°. 63 of the 5th magnitude in Series IX.

	h. m. s.
Time of transit of N°. 63	21 . 53 . 43
Time of transit of N°. 1	21 . 15 . 32
Excess of R.A. of N°. 63	38 . 11

	h. m. s.
Time of instrumental readings by X.	21 . 13 . 56
For X fast	– 1 . 34
Sidereal Time	21 . 12 . 22
Reading of fixed index	9 . 12 . 30
Correction of fixed index	– 8
Reading of moveable index	21 . 30 . 0
Approximate R.A. of N°. 1	21 . 29 . 52
Excess of R.A. of N°. 63	38 . 11
Approximate R.A. of N°. 63	22 . 8 . 3

	d. r.
Reading of Sector Microscope	26 . 0
Zero reading	15 . 18
Excess of former	10 . 2

	° ′
Excess in arc	+ 0 . 34,7
For micrometer reading $5\frac{3}{4}^r$, in lower half of field	– 1,6
For refraction	+ 2,1
Sum	= + 0 . 35,2
Reading of declination rod	103 . 0,0
Approximate N.P.D. of N°. 63	103 . 35,2

The star is consequently 42 Aquarii.

In a similar manner the following results were obtained:—

N°. 31 of Series I and N°. 16 of Series II are the same star, viz. N°. 41870 of the *Histoire Celeste*. (British Association's Reduced Catalogue.)

The first star of Series III is N°. 51 of Series VI, and N°. 68, the last star, is Bessel XXI. 619. (Weisse's Catalogue.)

N°. 12 of Series IV is 18 Aquarii.

N°. 9 of Series V is 50 Capricorni.

N°. 1 of Series VI is Bessel XXI. 736, and N°. 110 of the same Series is 75 Aquarii.

N°. 60 of Series VII is Bessel XXI. 1106. The reference star taken at the end of the Series is e^2 Aquarii.

N°. 19 of Series VIII is Bessel XXI. 1233; and the reference star taken between N^{os}. 39 and 40 is e^2 Aquarii. N°. 105 is Bessel XXII. 881.

N°. 21 of Series X and N°. 25 of Series XI are the same star, viz. B.A.C. 7599. The reference star taken at the end of each of these series is Bessel XXII. 736.

From the above results the limits of the zones given in the following Table were calculated. It is to be understood that the limiting N.P.D. are the greatest and least that occur in the zone.

Day of Observation. 1846.	Series.	R.A. of first Star of the Zone.	R.A. of last Star of the Zone.	Superior limit of N.P.D.	Inferior limit of N.P.D.	Method of observing.	Number of Stars.
		h. m. s.	h. m. s.	° ′	° ′		
July 29	I.	20 . 59 . 46	21 . 35 . 14	102 . 55,5	103 . 4,7	Telescope fixed	48
...	II.	20 . 59 . 46	21 . 35 . 14	102 . 55,7	103 . 5,1	Telescope fixed	33
30	III.	21 . 26 . 6	21 . 58 . 32	102 . 55,7	103 . 5,6	Telescope moving in R.A.	68
Aug. 4	IV.	21 . 1 . 20	21 . 27 . 12	102 . 19,1	103 . 38,6	Telescope moved in N.P.D.	19
...	V.	21 . 26 . 1	22 . 6 . 19	102 . 18,3	103 . 38,5	Telescope moved in N.P.D.	27
12	VI.	21 . 30 . 51	22 . 50 . 4	102 . 55,5	103 . 5,0	Telescope fixed	115
Sept. 28	VII.	21 . 12 . 29	22 . 1 . 31	102 . 32,8	102 . 42,5	Telescope fixed	88
...	VIII.	21 . 44 . 34	22 . 48 . 38	102 . 7,2	102 . 17,0	Telescope fixed	120
29	IX.	21 . 30 . 26	22 . 30 . 21	103 . 31,9	103 . 42,0	Telescope fixed	95
...	X.	21 . 29 . 56	22 . 33 . 25	103 . 23,5	103 . 33,7	Telescope fixed	103
...	XI.	21 . 30 . 24	22 . 53 . 57	103 . 15,9	103 . 25,8	Telescope fixed	101

For the purpose of testing the efficiency of the method of observing employed on July 30, by which it was proposed to take all stars without exception brighter than the 11th magnitude, it will be proper to compare the stars in the zone of that day with stars in coincident portions of the zones of other days on which the Telescope was fixed. The following are the only portions of zones coincident with that of Series III.

The zones of I and II coincide with that of III from R.A. $21^h. 26^m. 6^s.$ to R.A. $21^h. 35^m. 14^s.$

The zones of III and VI coincide from R.A. $21^h. 30^m. 51^s.$ to R.A. $21^h. 58^m. 32^s.$

Series V has in common with Series III a zone extending from R.A. $21^h. 26^m. 6^s.$ to R.A. $21^h. 58^m. 32^s$; and from N.P.D. $102°. 55',7$ to N.P.D. $103°. 5',6$. The latter limits expressed in readings of the Sector-microscope are $15^d. 0^r,2$ and $17^d. 18^r,0$. Hence the only stars of Series V included in the zone of Series III are N^{os}. 7, 13, 14, 19, 20, 22, 23, 24.

The coincidences of stars are given in the subjoined Table, in which the N^{os}. ranged opposite to those of Series III correspond to identical stars.

Series III.	VI.	V.	Series III.	VI.	V.	Series III.	VI.	V.	II.	I.
1	51		24	35		47	15			
2	50		25	34		48	14			
3			26	33		49	13			
4			27	32		50	12			
5	48	23	28	31		51	11		33	48
6	47	22	29			52	10		32	47
7			30	30	14	53				
8			31	29		54	9		31	46
9	46		32			55	8		30	45
10			33	28	13	56	7	7	29	44
11	45		34	27		57	6		28	
12	44		35	26		58	5		27	43
13	43		36	25		59			26	
14	42	20	37			60				42
15	41*	19	38	24		61				
16	41		39	23		62	2		25	
17	40		40	22		63	1		24	41
18	39 & 38		41	21		64			23	40
19	37		42	20		65			22	39
20			43	19		66			21	
21			44	18		67			20	37
22	36		45	17		68			18	33
23			46	16						

It thus appears that all the stars in the portion of Series VI corresponding to Series III are included in the latter Series, with the exception of N^{os}. 3, 4, and 49. The absence of N^{os}. 3 and 4 is accounted for by their being small stars, and so low in the field, as to be scarcely within the limits of the zone of Series III, the middle of which was of somewhat greater N.P.D. than that of zone VI. The absence of N^{o}. 49, a star of the eighth magnitude, cannot be similarly accounted for.

The stars of Series V whose positions are included in the zone of Series III, are all in the latter series, excepting N^{o}. 24, which is set down as a star of 8,9 magnitude.

The stars of the portions of I and II common to III, are all in this last series, with the exception of one between N^{os}. 66 and 67, and three between N^{os}. 67 and 68. These were small stars, which, as appears by the Remarks of Series III, were noticed but purposely passed over without recording their positions.

The foregoing discussion affords a presumption that N^{o}. 49 of Series VI and N^{o}. 24 of Series V are each of them positions of the Planet: and such accordingly they are found to be. Thus the process employed is proved to be adequate to the detection of the Planet. A comparison of Series VI with Series III like the preceding, was made soon after taking the observations, but was not carried beyond N^{o}. 39 of the former Series, where the line of separation occurs and the observations were suspended.

I proceed now to deduce the position of N^{o}. 24 of Series V and that of N^{o}. 49 of Series VI, by comparisons with all the known stars that occur in the same series, regarding the means of the results as the best determinations of the places of the Planet which the nature of the observations will allow of.

Calculation of the Place of the Planet on August 4.

No. of Series V.	Known Star.	Apparent R.A. of Star.	Excess of R.A. of Planet above R.A. of Star.	R.A. of Planet.	Apparent N.P.D. of Star.	Excess of N.P.D. of Planet above N.P.D. of Star.	N.P.D. of Planet.
		h. m. s.	m. s.	h. m. s.	° ′ ″	′ ″	° ′ ″
7	Bessel XXI. 818	21 . 33 . 44,34	+ 24 . 30,60	21 . 58 . 14,94	102 . 56 . 29,0	+ 1 . 1,2	102 . 57 . 30,2
8	—— XXI. 880	21 . 36 . 8,39	+ 22 . 5,79	14,18	102 . 28 . 6,3	+ 29 . 28,8	35,1
9	{50 Capricorni = B. XXI. 933}	21 . 38 . 27,29	+ 19 . 47,38	14,67	102 . 23 . 35,2	+ 33 . 44,9	20,1
11	B.A.C. 7599	21 . 41 . 24,98	+ 16 . 49,91	14,89	103 . 25 . 48,6	− 28 . 16,6	32,0
16	Bessel XXI. 1106	21 . 46 . 48,00	+ 11 . 26,69	14,69	102 . 41 . 21,9	+ 16 . 6,5	28,4
18	—— XXI. 1179	21 . 50 . 4,47	+ 8 . 10,30	14,77	102 . 49 . 37,1	+ 7 . 56,5	33,6
25	—— XXI. 1398	22 . 0 . 23,30	− 2 . 8,62	14,68	102 . 21 . 24,7	+ 36 . 8,6	33,3
26	38 Aquarii	22 . 2 . 27,08	− 4 . 12,22	14,86	102 . 18 . 44,8	+ 38 . 57,1	41,9
27	Bessel XXII. 116	22 . 6 . 19,80	− 8 . 5,00	21 . 58 . 14,80	103 . 0 . 35,7	− 2 . 59,5	102 . 57 . 36,2

It is probable that the reading of the Sector Microscope was 1^r in defect in N°. 9, and 1^r in excess in N°. 26.

The sector reading of N°. 27 has been increased 5^r conjecturally.

Calculation of the Place of the Planet on August 12.

No. of Series VI.	Known Star.	Apparent R.A. of Star.	Excess of R.A. of Planet above R.A. of Star.	R.A. of Planet.	Apparent N.P.D. of Star.	Excess of N.P.D. of Planet above N.P.D. of Star.	N.P.D. of Planet.
		h. m. s.	m. s.	h. m. s.	° ′ ″	′ ″	° ′ ″
55	Bessel XXII. 28	22 . 2 . 5,04	− 4 . 38,90	21 . 57 . 26,14	103 . 4 . 57,1	− 3 . 1,9	103 . 1 . 55,2
63	———— 116	6 . 19,88	− 8 . 53,90	25,98	103 . 0 . 35,2	+ 1 . 30,1	65,3
65	———— 192	9 . 28,27	− 12 . 2,00	26,27	102 . 59 . 57,0	+ 2 . 4,1	61,1
68	———— 243	12 . 6,14	− 14 . 40,10	26,04	102 . 59 . 6,0	+ 2 . 55,5	61,5
69	———— 251	12 . 31,00	− 15 . 4,90	26,10	103 . 1 . 31,3	+ 0 . 30,6	61,9
78	———— 420	19 . 32,99	− 22 . 7,00	25,99	103 . 3 . 34,0	− 1 . 28,4	65,6
80	———— 444	20 . 39,42	− 23 . 13,10	26,32	103 . 0 . 22,3	+ 1 . 38,6	60,9
88	———— 547	25 . 57,66	− 28 . 31,40	26,26	102 . 56 . 39,5	+ 5 . 16,2	55,7
90	———— 607	28 . 44,24	− 31 . 18,10	26,14	103 . 0 . 7,6	+ 1 . 55,6	63,2
95	———— 708	33 . 19,81	− 35 . 53,60	26,21	103 . 1 . 27,2	+ 0 . 30,6	57,8
101	———— 813	38 . 3,24	− 40 . 37,40	25,84	102 . 57 . 42,6	+ 4 . 20,1	62,7
110	75 Aquarii	22 . 46 . 3,54	− 48 . 37,20	21 . 57 . 26,34	102 . 59 . 53,0	+ 2 . 4,1	103 . 1 . 57,1

In the above calculations the excess of the Planet's above the Star's R.A., is the algebraic excess of the Chronometer time of transit of the Planet above that of the Star; and the excess of the Planet's N.P.D. above that of the Star is the algebraic excess of the reading of the Sector Microscope for the Planet above that for the Star, converted into arc by taking $1^d = 204'',72$ and $1^r = 10'',19$. As the differences of N.P.D. on Aug. 4 were considerable, corrections have been applied for refraction both to the differences of R.A. and the differences of N.P.D. The corrections for refraction on Aug. 12 were too small to be worth taking account of.

The stars of Bessel's zones are cited from Weisse's reduced Catalogue, and the places of that Catalogue are adopted. These places differ to a small amount from those which I obtained and employed (See Memoirs of the Royal Astron. Soc. Vol. XVI. p. 425) before the publication of the Catalogue, chiefly in the instances in which they depend on more

observations than I had taken account of. The places of the other stars are taken from the British Association Catalogue, with the exception of that of 50 Capricorni, which is a mean between the places of the two authorities cited.

As the Chronometer X was $56^s,5$ fast on Aug. 4 and $62^s,8$ fast on Aug. 12, the sidereal times of observation of the Planet were respectively, $22^h. 29^m. 43^s,5$ and $22^h. 28^m. 11^s,8$. Hence, taking the means of the different determinations of R.A. and N.P.D. on the two days, we obtain the following results:—

	Greenwich Mean Time.	R.A. of Planet.	N.P.D. of Planet.
	h. m. s.	h. m. s.	° ′ ″
Aug. 4.	13.36.25	21.58.14,72	102.57.32,3.
12.	13. 3.26	21.57.26,14	103. 2. 0,7.

The errors of R.A. are probably not greater than those incidental to transits at a single wire. I estimate the probable errors of N.P.D. at 3″ on Aug. 4 and at 4″ on Aug. 12.

The above are the first places of Neptune which have been recorded in consequence of the theoretical investigations which indicated the existence of a Planet exterior to Uranus.

It remains to obtain the position of N°. 35 in Series X against which stands the Remark, "seemed to have a disk", for the purpose of ascertaining whether the suspicion of its being the Planet is verified. N°. 21 in the same series is B.A.C. 7599. The apparent R.A. of which was $21^h. 41^m. 24^s,9$, and the apparent N.P.D. 103°. 25′. 47″. Hence as Chronometer X was $1^m. 34^s$ fast, the approximate place of N°. 35 was,

	Greenwich Mean Time.	R.A.	N.P.D.
	h. m.	h. m. s.	° ′ ″
Sept. 29.	10.10	21.52.48,9	103.26.30.

As no star exists in this position, and as the Planet was observed to have the following positions on Oct. 3 and Oct. 5, viz.

	Greenwich Mean Time.	R.A.	N.P.D.
	h. m.	h. m. s.	° ′ ″
Oct. 3.	8. 3	21.52.32,6	103.28. 2.
5.	10.57	21.52.24,2	103.28.47.

there can be no doubt that the object which attracted my attention on Sep. 29 was the Planet.

It may be interesting to remark with reference to the two modes of registering the approximate places of stars by the 'Telescope moving' and the 'Telescope fixed,' that in the same zone 28^m long and 10′ broad, 63 stars were taken by the former method in 76 minutes of sidereal time and 51 by the latter in 28 minutes. The method with 'Telescope moving,' is therefore more effective than the other, but much more tedious. The observations of July 30 were, however, a first trial of it: probably greater expedition would be attained by experience.

Respecting the contents of the second of the two Reports that follow I have only to remark, that in the autumn of 1847 I several times saw the appearance which I suppose to be a Ring of Neptune, both before and after opposition, and when the Planet was not far from the meridian; and the axis of elongation constantly had the same position relatively to a parallel of declination as when noticed at the beginning of the year. In the present year (1848) I have had occasion to take out the object-glass from its cell, and re-adjust the two lenses: so that at the next opposition of the Planet, I shall be able to ascertain whether the appearance noticed is dependent on the relative positions of the lenses, one of which is now turned about the axis of the Telescope into an entirely different position relatively to the other.

CAMBRIDGE OBSERVATORY,
May 10, 1848.

ST CATHARINE'S HALL LODGE. *Dec.* 12, 1846.

THE SYNDICATE appointed to visit the OBSERVATORY, conceiving the subject at the present time to possess peculiar interest, beg leave to submit to the SENATE the following STATEMENT of Professor CHALLIS, describing the course of observations, founded on the THEORETICAL CALCULATIONS of Mr ADAMS of St John's College, and made at the Observatory, with a view to the discovery of the New Planet.

H. PHILPOTT, *Vice-Chancellor.*
JOHN GRAHAM.
B. CHAPMAN.
W. WHEWELL.
JOSHUA KING.
GEO. PEACOCK.
JAMES CARTMELL.
CHAS. W. GOODWIN.
W. C. MATHISON.
G. G. STOKES.

SPECIAL REPORT OF PROCEEDINGS IN THE OBSERVATORY RELATIVE TO THE NEW PLANET.

AT a meeting of the OBSERVATORY SYNDICATE, held at the Observatory on Dec. 4, for the despatch of ordinary business, a strong desire having been expressed by the Vice-Chancellor and the members of the Syndicate generally, to receive from me a Special Report of Observatory proceedings relating to the newly-discovered Planet, drawn up in such a manner, and in such detail, as would enable them to lay complete information on the subject before the members of the Senate, I considered it to be my duty at once to comply with this request. A new body of the Solar System has been discovered, by means depending on the farthest advances hitherto made in Theoretical and Practical Astronomy, and confirming, in a most remarkable manner, the Theory of Universal Gravitation. It is, therefore, on every account desirable, that the members of the Senate should be made fully acquainted with the part which has been taken by the Cambridge Observatory, relatively to this important extension of Astronomical Science. The observations I shall have to speak of, and the reasons for undertaking them, are so closely connected with Theoretical Calculations performed by a member of this University, to account for anomalies in the motion of the planet Uranus, that the history of the former necessarily involves that of the latter. I hope that for this reason, and because of the peculiar nature of the circumstances, I may be allowed to make a communication less formal and restricted in its character, than a mere Report of Observatory proceedings.

The Tables with which the observations of the planet Uranus have been uniformly compared, were published by A. Bouvard in 1821. They are founded on a continued series of observations extending from 1781, the year of its discovery, to 1821. Previous to 1781, it had been accidentally observed seventeen times as a fixed star, the earliest observation of this kind being one by Flamsteed in 1690. Bouvard met with a difficulty

in forming his Tables. On an attempt to found them upon the ancient, as well as the modern observations, it appeared that the theoretical did not agree with the observed course of the Planet. He thought this might be attributed to the imperfection of the ancient observations, and consequently rejected all previous to 1781, in the formation of the Tables finally published. These Tables represent well enough the observations in the forty years from 1781, to 1821; but very soon after the latter year, new errors began to shew themselves, which have gone on increasing to the present time. It was now evident that the ancient observations had been rejected on insufficient grounds, and that from some unknown cause the Theory was in fault. Were the Tables calculated inaccurately? The difference between observation and theory (amounting in 1841 to 96″ of geocentric longitude,) was too great, and Bouvard's calculations were made with too much care, to allow of this explanation. The effect of small terms neglected in the calculation of the perturbations caused by Jupiter and Saturn, could not be supposed to bear any considerable proportion to the observed amount of error. This state of the Theory suggested to several astronomers the idea of disturbances, caused by an undiscovered Planet more distant than Uranus. But there is no evidence of this hypothesis having been put to the test of calculation previous to 1843. The usual problem of perturbations is to find the disturbing action of one body on another, by knowing the positions of both. Here an inverse problem, hitherto untried, was to be solved; viz. from known disturbances of a Planet in known positions, to find the place of the disturbing body at a given time. Mr Adams, Fellow of St John's College, shewed me a memorandum made in 1841, recording his intention of attempting to solve this problem as soon as he had taken his degree of B.A. Accordingly, after graduating in January 1843, he obtained an approximate solution by supposing the disturbing body to move in a circle at twice the distance of Uranus from the Sun. The result so far satisfied the observed anomalies in the motion of Uranus, as to induce him to enter upon an exact solution. For this purpose he required reduced observations made in the years 1818—1826, and requested my intervention to obtain them from Greenwich. The Astronomer Royal, on my application, immediately supplied, (Feb. 15, 1844), all the heliocentric errors of Uranus in longitude and latitude, from 1754 to 1830, completely reduced. Mr Adams was now furnished with ample data from observation, and his next care was to ascertain whether Bouvard's theoretical calculations were correct enough for his purpose. He tested the accuracy of the principal terms of the perturbations caused by Jupiter and Saturn, and concluded that the small terms which Bouvard had not taken into account, would not sensibly affect the final results, the chief of them being either of long period, or of a period nearly equal to that of Uranus. Besides which he introduced into the theory several corrections which had been derived from observation and calculation by different Astronomers, since 1821. The calculations were completed in 1845. In September of that year, Mr Adams placed in my hands a paper containing numerical values of the Mean Longitude at a given epoch, Longitude of Perihelion, Eccentricity of Orbit, Mass, and Geocentric Longitude, Sept. 30, of the supposed disturbing Planet, which he calls by anticipation, "The New Planet," evidently shewing the conviction in his own mind of the reality of its existence. Towards the end of the next month, a communication of results slightly different was made to the Astronomer Royal, with the addition of what was far more important, viz. a list of the residual errors of the mean longitude of Uranus, for a period extending from 1690 to 1840, after taking account of the disturbing effect of the supposed Planet. This comparison of observation with the theory, implied the determination of *all* the unknown quantities of the Problem, both the corrections of the elements of Uranus, and the elements of the disturbing body. The smallness of the residual errors proved that the new theory was adequate to the explanation of the observed anomalies in the motion of

Uranus, and that as the error of Longitude was corrected for a period of at least 130 years, the error of Radius Vector was also corrected. As the calculations rested on an assumption, made according to Bode's law, that the mean distance of the disturbing Planet was double that of Uranus, without the above-mentioned numerical verification, no proof was given that the Problem was solved, or that the elements of the supposed Planet were not mere speculative results. The earliest evidence of the complete solution of an inverse Problem of perturbations is to be dated from October 1845.

Although the comparison of the theory with observation proved synthetically that the assumed mean distance was not very far from the truth, it was yet desirable to try the effect of an alteration of the mean distance. Mr Adams accordingly went through the same calculations as before, assuming a mean distance something less than the double of that of Uranus, and obtained results which indicated a better accordance of the theory with observation, and led him to the conclusion, which has since been confirmed by observation, that the mean distance should be still farther diminished. This second solution taken in conjunction with the first may be considered to relieve the question of every kind of assumption. The new elements of the disturbing body, and the results of comparing the observed with the theoretical mean longitudes of Uranus, were communicated to the Astronomer Royal at the beginning of September 1846. These were accompanied by numerical values of errors of the radius vector, the Astronomer Royal having enquired after the reception of the first solution, whether the error of radius vector, known to exist from observation, was explained by this theory. It would be wrong to infer that Mr Adams was not prepared to answer this question till he had gone through the second solution. Errors of radius vector were as readily deducible from the first solution as from the other.

The preceding details are intended to point out the circumstances which led astronomers to suspect the existence of an additional body of the Solar System, and the theoretical reasons there were for undertaking to search for it. No one could have anticipated that the place of the unknown body was indicated with any degree of exactness by a theory of this kind. It might reasonably be supposed, without at all mistrusting the evidence which the theory gave of the *existence* of the Planet, that its position was determined but roughly, and that a search for it must necessarily be long and laborious. This was the view I took, and consequently I had no thought of commencing the search in 1845, the Planet being considerably past opposition at the time Mr Adams completed his calculations. The succeeding interval to Midsummer of 1846 was a period of great astronomical activity, the planet Astræa, Biela's double comet, and several other comets, successively demanding attention. During this time I had little communication with Mr Adams respecting the New Planet. Attention was again called to the subject by the publication of M. Leverrier's first Researches in the *Compte Rendu* for June 1, 1846. At a meeting of the Greenwich Board of Visitors held on June 29, at which I was present, Mr Airy announced that M. Leverrier had obtained very nearly the same longitude of the supposed Planet as that given by Mr Adams. On July 9, I received a letter from Mr Airy, in which he suggested employing the Northumberland Telescope in a systematic search for the Planet, offering at the same time to send an assistant from Greenwich, in case I declined undertaking the observations. This letter was followed by another dated July 13, containing suggestions respecting the mode of conducting the observations, and an estimation of the amount of work they might be expected to require. In my answer, dated July 18, I signified the determination I had come to of undertaking the search. Various reasons led me to this conclusion. I had already, as Mr Adams can testify, entertained the idea of making these observations; the most convenient time for commencing them was now approaching; and the confirmation of Mr Adams's theoretical position by the calculations

of M. Leverrier appeared to add very greatly to the probability of success. I had no answer to make to Mr Airy's offer of sending an assistant, as I understood the acceptance of it to imply the relinquishing on my part of the undertaking.

I have now to speak of the observations. The plan of operations was formed mainly on the suggestions contained in Mr Airy's note of July 13. It was recommended to sweep over three times at least, a zodiacal belt 30° long and 10° broad, having the theoretical place of the planet at its centre; to complete one sweep before commencing the next; and to map the positions of the stars. The three sweeps, it was calculated, would take 300 hours of observing. This extent of work, which will serve to shew the idea entertained of the difficulty of the undertaking before the Planet was discoverd, did not appear to me greater than the case required. It will be seen that the plan did not contemplate the use of hour XXI. of the Berlin star-maps, the publication of which was equally unknown at that time to Mr Airy and myself. It may be proper here to explain that the construction of a good star-map requires a great amount of time and labour both in observing and calculating, and that precisely this sort of labour must be gone through to conduct a search of the kind I had undertaken. The stars must first be mapped before the search can properly be said to begin. With a map ready made, the detection of a moving body, as it happened in this instance, might be effected on a comparison of the heavens with the map by mere inspection. Not having the advantage of such a map, I proceeded as follows. I noted down very approximately the positions of all the stars to the 11th magnitude that could be conveniently taken as they passed through the field of view of the telescope, the breadth of the field with a magnifying power of 166 being 9′, and the telescope being in a fixed position. When the stars came thickly, some were necessarily allowed to pass without recording their places. Wishing to include *all* stars to the 11th magnitude, I proposed in going over the same region a second time, to avail myself of an arrangement peculiar to the Northumberland Equatoreal, the merit of inventing which is due to Mr Airy. The Hour-circle, Telescope, and Polar Frame, are moveable by clock-work, which may be regulated to sidereal time nearly. While this motion is going on, the Telescope and Polar Frame are moveable *relatively to the Hour Circle*, by a Tangent-screw apparatus, and a handle extending to the observer's seat. This contrivance enables the observer to measure at his leisure differences of Right Ascension however small, and therefore meets the case of stars coming in groups. The observations made by this method might include all the stars it was thought desirable to take, and therefore might include *all* the stars taken in the first sweep. The discovery of the Planet would result from finding that any star in the first sweep was not in its position in the second sweep. If two sweeps failed in detecting the Planet among the stars of the first sweep, it might be among the stars of the second, which would be decided by taking a third sweep of the same kind as the second. It will appear that this plan carried out, would not only detect the Planet if it were in the region explored, but would also, in case of failure, enable the observer to pronounce that it was not in that region. The second mode of observing required the aid of my two assistants, Mr Morgan and Mr Breen, in reading off and recording the observations.

I commenced observing July 29, employing on that day the first method, with Telescope fixed. The next day I observed according to the second method, with Telescope moving. On Aug. 4, the Telescope was fixed as to Right Ascension, but was moved in declination in a zone of about 70′ breadth, the intention of the observations of that day being to record points of reference for the zones of 9′ breadth. On Aug. 12, the fourth day of observing, I went over the same zone, Telescope fixed, as on July 30 with Telescope moving. Soon after Aug. 12, I compared, to a certain extent, the observations of that day, with the observations of July 30, taken with Telescope moving; and finding, as far as I

carried the comparison, that the positions of July 30 included *all* those of Aug. 12, I felt convinced of the adequacy of the method of search I had adopted. The observations were continued with diligence to Sept. 29, chiefly with Telescope fixed, and were made early in Right Ascension for the purpose of exploring as large a space as possible before I should be compelled to desist by the approach of day-light. On Oct. 1, I heard that the Planet was discovered by Dr Galle, at Berlin, on Sep. 23. I had then recorded 3150 positions of stars, and was making preparations for mapping them. The following results were obtained by a discussion of the observations after the announcement of the discovery.

On continuing the comparison of the observations of July 30 and Aug. 12, I found that No. 49, a star of the 8th magnitude in the series of Aug. 12, *was wanting in the series of July* 30. According to the principle of the search, this was the Planet. It had wandered into the zone in the interval between July 30 and Aug. 12. I had not continued the former comparison beyond No. 39, probably from the accidental circumstance that a line was there drawn in the memorandum-book in consequence of the interruption of the observations by a cloud. After ascertaining the place of the planet on Aug. 12, I readily inferred that it was also among the reference stars taken on Aug. 4. Thus, after four days of observing two positions of the planet were obtained. This is entirely to be attributed to my having, on those days, directed the telescope towards the planet's theoretical place, according to instructions given in a paper Mr Adams had the kindness to draw up for me. I would also beg to call attention to the fact that, after Aug. 12, the planet was discoverable by a closet-comparison of the observations, a method of observing, depending on novel and ingenious mechanism, having been adopted, by which I could say of each star, to No. 48, 'This is not a planet,' and of No. 49, 'This *is* a planet.' I lost the opportunity of announcing the discovery, by deferring the discussion of the observations, being much occupied with reductions of comet observations, and little suspecting that the indications of theory were accurate enough to give a chance of discovery in so short a time. On Sep. 29, I saw, for the first time, the communication presented by M. Leverrier to the Paris Academy on Aug. 31. I was much struck with the manner in which the author limits the field of observation; and with his recommending the endeavour to detect the planet by its disk. Mr Adams had already told me, that, according to his estimation, the planet would not be less bright than a star of the ninth magnitude. On the same evening I swept a considerable breadth in declination, between the limits of right ascension marked out by M. Leverrier, and I paid particular attention to the physical appearance of the brighter stars. Out of 300 stars, whose positions I recorded that night, I fixed on one which appeared to have a disk, and which proved to be the Planet. This was the third time it was observed before the announcement of the discovery reached me. This last observation may be regarded as a discovery of the Planet, due to the good definition of the noble instrument which we owe to the munificence of our Chancellor.

From the reduced places of the Planet, on Aug. 4 and Aug. 12, and from observations since its discovery extending to Oct. 13, Mr Adams calculated, at my request, values of its heliocentric longitude at a given epoch, its actual distance from the sun, longitude of the node, and inclination of the orbit, which were published as early as Oct. 17. I am now diligently observing the Planet with the meridian instruments, and when day-light prevents its being seen on the meridian, I propose carrying on the observations as long as possible with the Northumberland equatoreal, for the purpose of obtaining data for a further approximation to the elements of the orbit.

My Report of proceedings relating to the Planet here terminates. I beg permission to add a few remarks, which the facts I have stated seem to call for. It will appear by the above account, that my success might have been complete, if I had trusted more implicitly

to the indications of the Theory. It must, however, be remembered, that I was in quite a novel position: the history of Astronomy does not afford a parallel instance of observations undertaken entirely in reliance upon deductions from theoretical calculations, and those too of a kind before untried. As the case stands, a very prominent part has been taken in the University of Cambridge, with reference to this extension of the boundaries of astronomical science. We may certainly assert to be facts, for which there is documentary evidence, that the Problem of determining, from perturbations, the unknown place of the disturbing body, was first solved here; that the Planet was here first sought for; that places of it were here first recorded; and that approximate elements of its orbit were here first deduced from observation. And that all this may be said, is entirely due to the talents and labours of one individual among us, who has at once done honour to the University, and maintained the scientific reputation of the country. It is to be regretted that Mr Adams was more intent upon bringing his calculations to perfection, than on establishing his claims to priority by early publication. Some may be of opinion, that in placing before the first Astronomer of the kingdom, results which shewed that he had completed the solution of the Problem, and by which he was, in a manner, pledged to the production of his calculations, there was as much publication as was justifiable on the part of a mathematician whose name was not yet before the world, the theory being one by which it was possible the practical astronomer might be misled. Now that success has attended a different course, this will probably not be the general opinion. I should consider myself to be hardly doing justice to Mr Adams, if I did not take this opportunity of stating, from the means I have had of judging, that it was impossible for any one to have comprehended more fully and clearly all the parts of this intricate Problem; that he carefully considered all that was necessary for its exact solution; and that he had a firm conviction, from the results of his calculations, that a Planet was to be found.

(Signed) J. CHALLIS.

Cambridge Observatory,
Dec. 12, 1846.

St CATHARINE'S HALL LODGE. *March* 22, 1847.

The Syndicate appointed to visit the Observatory beg to submit to the Senate the following Statement of Observations made by Professor Challis on the New Planet, in continuation of those described in his former Report, and also of the results deduced from them by Mr Adams respecting the Elements of the Planet's Orbit.

H. PHILPOTT, *Vice-Chancellor.*
JOHN GRAHAM.
B. CHAPMAN.
W. WHEWELL.
JOSHUA KING.
GEORGE PEACOCK.
JAMES CARTMELL.
CHAS. W. GOODWIN.
G. G. STOKES.

SECOND REPORT OF PROCEEDINGS IN THE OBSERVATORY RELATING TO THE NEW PLANET (*NEPTUNE*).

In conformity with a wish expressed by the Vice-Chancellor and the Observatory Syndicate at their ordinary terminal meeting, held on March 15, I propose in this Report to carry on, for the information of members of the Senate, the account of proceedings in the Observatory relative to the new Planet, a first Report of which was made on Dec. 12 of last year. The theoretical grounds on which a search for the Planet was instituted, the manner in which the search was conducted, and the degree of success that attended it, were stated in the former Report, which brought the history of proceedings down to the date at which the Planet was discovered. I have now to give an account of the subsequent observations both of its position in the heavens, and of its physical appearance, and to state the results respecting the orbit which have been deduced from the observations by calculation.

A regular series of observations of the Planet was commenced on Oct. 3, 1846, and continued at all available opportunities, partly with the meridian instruments, and partly with the Northumberland Equatoreal, to Dec. 4, soon after which the Planet became too faint to observe on the meridian on account of day-light. The observations were subsequently carried on with the Equatoreal to Jan. 15. The series was much interrupted by cloudy weather, particularly in the months of December and January. On the whole I have obtained 28 positions of the Planet with the meridian instruments, and 25 positions with the Northumberland Equatoreal by means of 92 differential observations of Right Ascension and as many of North Polar Distance. The Equatoreal measures were all referred to the same star, N°. 7648 of the British Association Catalogue, the exact place of which was determined by 16 observations with the Transit, and 8 observations with the Mural Circle. I have reason to think that the positions obtained with the Equatoreal are entitled to very nearly the same weight as those obtained on the meridian. All the above observations I have completely reduced, and have placed the results at the disposal of Mr Adams for deducing elements of the Planet's orbit.

On Jan. 12, I had for the first time a distinct impression that the Planet was surrounded by a ring. The appearance noticed was such as would be presented by a ring like that of Saturn, situated with its plane very oblique to the direction of vision. I felt convinced that the observed elongation could not be attributed to atmospheric refraction, or to any irregular action on the pencils of light, because when the object was seen most steadily I distinctly perceived a *symmetrical* form. My assistant, Mr Morgan, being requested to pay particular attention to the appearance of the Planet, gave the same direction of the axis of elongation as that in which it appeared to me. I saw the ring again on the evening of Jan. 14. In my note-book I remark, 'The ring is very apparent with a power of 215, in a field considerably illumined by lamp-light. Its brightness seems equal to that of the Planet itself.' On that evening, Mr Morgan, at my request, made a drawing of the form, which on comparison coincided very closely with a drawing made independently by myself. The ratio of the diameter of the Ring to that of the Planet, as measured from the drawings, is about that of 3 to 2. The angle made by the axis of the Ring with a parallel of declination, in the south-preceding or north-following quarter, I estimated at 60°. By a measurement taken with the position circle on Jan. 15, under very unfavourable circumstances, this angle was found to be 65°. I am unable to account entirely for my not having noticed the Ring at an earlier period of the observations. It may, however, be said that an appearance like this, which it is difficult to recognize except in a good state of the atmosphere, might for a long time escape detection, if not expressly and repeatedly looked for. To force itself on the attention, it would require to be seen under extremely favourable circumstances. Previous to the observations in January, the Planet had been hid for more than three weeks by clouds. The evenings of Jan. 12 and 14 were particularly good, and the Planet was at first looked at in strong twilight. Under very similar circumstances I have twice seen with the Northumberland Telescope the second division of Saturn's Ring.

I communicated to Mr Lassell of Liverpool, who was the first to suspect the existence of a Ring, my observations upon it, accompanied with a drawing; and I have received from him in return a drawing of the appearance presented in his ten-feet reflector, closely resembling mine both as to the form and the position of the Ring. Mr Lassell writes, "I cannot refuse to consider that your observation puts beyond reasonable doubt the reality of mine." In this conclusion I concur, and accordingly in communications to the Royal Astronomical Society and to Schumacher's *Astronomische Nachrichten*, containing my reduced observations, I have ventured to express my conviction of the existence of a Ring.

By micrometer measures taken with the Northumberland Telescope, I find the apparent diameter of the body of the Planet to be very nearly 3″.

The above account includes all the observations on the Planet I could obtain before its disappearance in the Solar Rays. By the kindness of Mr Adams I am able to add some particulars respecting its orbit, which he has derived by calculation from the reduced places with which I furnished him. As was stated in the former Report, Mr Adams calculated first approximations to the elements, by employing the places I obtained on Aug. 4 and Aug. 12 in the course of searching for the Planet, with observations since the discovery extending to Oct. 13. For the sake of comparison with the second approximations, I now give the first results.

Heliocentric Longitude	326°.39′	August 4, 1846.
Longitude of the Descending Node	309.43	
Inclination of the Orbit	1.45	
Distance of the Planet from the Sun	30,05.	

In calculating the following second approximations Mr Adams used the mean of the two places of August as a single place, and of the others he selected nine which seemed to be the best determined, and which were separated by convenient intervals. All the results are calculated for the epoch of 1846, Aug. 8,0, mean time at Greenwich.

	° ′ ″
Heliocentric Longitude of the Planet referred to the mean Equinox of 1847,0	326 . 41 . 12,3
Heliocentric motion in Longitude in 100 days	36 . 5,52
Heliocentric Latitude South	30 . 34,4
Change of Heliocentric Latitude in 100 days	1 . 4,44
Longitude of the Descending Node	310 . 3 . 44,0
Inclination of the Orbit	1 . 46 . 49,1
Distance of the Planet from the Sun	30,008
Half the Latus Rectum of the Orbit	30,228.

The first position on which the above results depend, that of Aug. 4, was obtained 16 days before the Planet was in opposition, and the last position, that of Jan. 15, 32 days before it was in conjunction. The great variation of the Planet's elongation from the Sun in this interval, is favourable to the correctness of the above determinations, which, although they cannot pretend to extreme accuracy on account of the short period over which the observations extend, are yet entitled to considerable weight. Mr Adams has in fact calculated the probable errors of the above results by supposing each observation of Right Ascension or of North Polar Distance to be liable to an error of 3″, and he finds that there is little probability of their receiving any great amount of correction by taking account of future observations. It may be remarked that the first and second approximations do not differ by any large quantities. Hence it may be inferred that the places of August are deserving of confidence, and that, on account of the extension given to the period of observation by including those places, this second approximation to the elements is more accurate than it would have been if it depended solely on observations made since the discovery of the Planet.

The calculations give 59′.8″ for the Planet's Heliocentric motion from Aug. 4 to Jan. 15. This is so small an arc that it is not possible to deduce with any degree of certainty those elements the determination of which depends on change of the heliocentric distance. Mr Adams has, however, discussed the observations with this object in view, and has obtained certain limiting results, which, as possessing considerable interest, I here subjoin.

The eccentricity of the orbit cannot exceed 0,18. The most probable value is 0,06, which differs but little from the eccentricities of the orbits of Jupiter, Saturn, and Uranus.

The most probable longitude of perihelion is 49°.58′, and the probable true anomaly 276°.43′, according to which the Planet is near the extremity of the latus rectum and is descending towards perihelion. These results are extremely uncertain.

The mean distance is 30,35, with a probable error of 0,25; and the corresponding sidereal period is 167 years, with a probable error of about 2 years. It is remarkable that the periodic time is very nearly double that of Uranus; so that these two bodies will offer an instance of mutual perturbations of large amount, differing in character from those of the other planets, but analogous to the mutual perturbations of the first and second, and second and third satellites of Jupiter.

According to Bode's law of the planetary distances, the mean distance of the New Planet should be nearly 38. The actual mean distance differs so much from this, that we are

compelled to conclude that this singular law, which holds with reference to the other planets, fails in this instance.

Since the apparent diameter of the New Planet is to that of Uranus nearly in the ratio of 3 to 4, according to the foregoing determination of the distance its bulk is to that of Uranus in the ratio of 8 to 5.

The above is the sum of the results derivable from the first series of observations. For further and more exact information we must wait till the Planet emerges from the solar rays. Before concluding this Report, I am desirous of saying a few words respecting the *Name* of the Planet. I recently had the satisfaction of receiving from M. Struve the copy of a communication read by him at the general annual meeting of the Imperial Academy of Sciences of St Petersburg on Dec. 29, in which he states the reasons that have induced himself and the other Poulkova astronomers to adhere to the name of *Neptune*, which name was first proposed by the French Board of Longitude, shortly after the discovery of the Planet. These reasons are thus briefly expressed in a note addressed to me personally: "The Poulkova astronomers have resolved to maintain the name of Neptune, in the opinion that the name of Leverrier would be against the accepted analogy, and against historical truth, as it cannot be denied that M. Adams has been the first theoretical discoverer of that body, though not so happy as to effect a direct result of his indications." M. Struve's communication has been published in this country by the Astronomer Royal, who has expressed his assent to the reasons therein contained, and his determination to adopt the name of Neptune. Professor Gauss and Professor Encke have also, as I understand, adopted this name. I have only to add that it is my intention (and I am permitted to say, the intention of Mr Adams also) to follow the example set by these eminent astronomers.

(Signed) J. CHALLIS.

CAMBRIDGE OBSERVATORY,
March 22, 1847.

APPENDIX. N°. II.

ACCOUNT

OF THE

NORTHUMBERLAND EQUATOREAL AND DOME.

ACCOUNT

OF THE

NORTHUMBERLAND EQUATOREAL AND DOME,

ATTACHED TO

THE CAMBRIDGE OBSERVATORY.

BY G. B. AIRY, ESQ. M. A.

ASTRONOMER ROYAL,

LATE PLUMIAN PROFESSOR IN THE UNIVERSITY OF CAMBRIDGE.

CAMBRIDGE:

PRINTED AT THE UNIVERSITY PRESS.

M.DCCC.XLIV.

ACCOUNT

OF THE

NORTHUMBERLAND EQUATOREAL AND DOME.

In the month of August 1833 I was honoured with an intimation from the Duke of Northumberland (conveyed in the first instance through Sir John Herschel), that his Grace was desirous of presenting to the Cambridge Observatory an object-glass of nearly 12 inches in diameter, then offered for sale by M. Cauchoix, of Paris, if it should be judged to be good, and if it should be deemed a useful addition to the instruments of the Observatory. I lost no time in stating to his Grace the very great value which I attached to the possession of such a telescope; and I immediately received from him instructions to place myself in communication with M. Cauchoix. Considerable delay, however, occurred before the object-glass was sent to England; produced principally by an accident in Paris, which had nearly destroyed the object-glass. A large piece was broken out of one edge of the flint-lens, and it was necessary completely to re-work one surface. The object-glass, in a trial tube, was received at Cambridge on the 17th of December, 1834, and preparations were soon commenced for trying it upon stars. The object-glass at first (from an error in position) did not give a good image: and in endeavouring to avail myself of the assistance of a London optician of repute for its adjustment, I was deeply impressed with the imperfection of the methods usually adopted by opticians, and especially with the trouble and difficulty of applying them to a telescope 20 feet in length. I succeeded however in so far adjusting it, that on the 31st of May, 1835, I was able to report to the Duke of Northumberland that M. Cauchoix had fulfilled his engagement, and I immediately received his Grace's directions to close the arrangement with M. Cauchoix, and (after due communication with the authorities of the University of Cambridge) to proceed to take steps for mounting the telescope in the way which I should judge best.

During the time which had elapsed since I received the first notification of the intended present, my attention had naturally been turned to the different constructions adopted for domes, and the different forms of equatoreal mounting. I examined domes running upon fixed rollers without guides, domes guided by horizontal rollers, domes moving upon balls in square channels, domes moving upon chains of rollers,—and in all I found the difficulty of moving the domes, and the occasional liability to stick perfectly fast, to be so great, that I actually requested the Duke of Northumberland to permit me to mount the telescope in the open air. At length I had the good fortune to examine a dome turning upon free balls between concave channels (in the Observatory of E. B. Beaumont, Esq. Finningley Park, near Doncaster), and I was so much struck with the difference between its motion and that of any other dome which I had examined, that I began carefully to study the causes of this extreme facility of movement and total absence of jamming. I found that they arose principally from this circumstance: that any small alteration in the form of the dome (for instance, a change of the lower ring or curb from a circular to an elliptical form), or any small lateral disturbance (for instance, a displacement produced by the wind), is by this arrangement permitted to take place without introducing lateral friction, at the same time that the forces which are brought into action tend to restore the dome to its normal state and normal position. With this circumstance, another of less importance co-operated; namely, that there was no friction of axles, or (as in the chain of rollers) friction produced by incompatible movements. I had now no difficulty in undertaking to construct a dome which (though of a size equalled in only one previous instance) should move with perfect freedom. And I had seen in various instances, that a dome might be constructed of large dimensions without the use of curved wood (except in the curbs), and without difficulty in the management of the shutters. It was therefore determined to mount the telescope under a dome.

The position which I selected in the grounds of the Observatory is one which, though not unexceptionable, is extremely good. Its view is clear to the horizon, or nearly so, on every side, excepting an angle of azimuth of about 35° in the north-east, in which the principal building of the Observatory cuts off a part of the horizon. The only objections to this site are, that the ground is a little lower than that of the Observatory, and that the position of the dome is so near to the boundary of the Observatory-grounds, that it is exposed to danger from mischievous persons on the outside.

The selection of a form of equatoreal mounting was a matter of great anxiety. The first point to be determined was, whether the two bearings of the polar-axis should be both below the declination-axis (as in the mounting of the Dorpat equatoreal, and several of larger as well as of smaller dimensions since constructed, principally by German artists); or whether one bearing should be so far above the declination-axis, and the other so far below it, that the telescope could turn round in a meridian between them, (as in the Shuckburgh equatoreal at the Greenwich Obser-

vatory, the small equatoreal at the Cambridge Observatory, and many others). The former may for distinction be called the German mounting, the latter the English mounting. In comparing these, it must be remarked, that the German mounting necessarily implies (unless the axis be made extremely weak) that the diameter of the pivot at the upper bearing is extremely large; and the movement will therefore have a certain degree of stiffness. It also makes it impossible to use an hour-circle of large diameter, except when the axis is made very long, and the hour-circle is placed at its lower extremity: in this case, the connexion between the hour-circle and the telescope is liable to the unsteadiness of torsion of a long axis (unless it is very thick); or if the hour-circle is near the telescope, and therefore small, the most trifling imperfection of the clamps and slow-motion screws produces the most serious unsteadiness. The weight of a mounting of this kind, in consequence of the weight which is usually given to the axis, and the necessity for a counterpoise to the telescope, is (I believe) greater than that of a mounting in the English form for the same telescope. The telescope is necessarily placed on one side of the polar axis, so that both the bearings of the declination-axis are on the same side of the telescope; the bearing pivots are therefore very large: and the declination-circles and clamping-circles (in all existing specimens) are very small. Lastly, there is a practical inconvenience of the gravest kind: that when, during the observation of a celestial object, the object arrives at the meridian, it is necessary to turn the telescope on the declination-axis to the same polar distance on the opposite side, and to turn the polar-axis 180°; thus causing for a time a most troublesome interruption to the observations.

From all the objections which I have mentioned the English mounting is free. The pivots at the upper and lower bearings may be made small. The hour-circle and its clamping-circle may be made very large. The telescope may be mounted like a transit instrument between the two pillars or frames which are parallel to the polar axis, so that its pivots may be small, with any degree of strength for the middle of the declination-axis. The declination-circle may be extremely large. Lastly, there is no interruption to the continual movement of the instrument in hour-angle during the continuance of a series of observations.

It is possible to adopt the principle of placing the telescope between the two bearings of the polar-axis, but still to place the telescope on one side of the polar-axis, and a counterpoise on the other side. But in this intermediate form nothing is gained with regard to the strength of the polar-frame as respects torsion; and it is subject to the same inconvenience with regard to the size of the pivots of the declination-axis as the German mounting.

The only inconveniences or defects which I have been able to discover in the English mounting are the following. First, that as the polar-frame within which the telescope turns is necessarily somewhat longer and broader than the telescope, and as the supports for the upper bearing must be exterior to the polar-frame, theoretically a larger dome is necessary for the English mounting than for the German

mounting. Practically, however, this inconvenience is nothing; for the dimensions of the dome of the Northumberland Telescope are not greater than are required for mere convenience. Secondly, that (except in such a case as that of the Armagh equatoreal, where the telescope turns within the hour-circle, a construction practicable only for small instruments), the declination-axis is necessarily at a distance from the hour-circle and its clamping circle; and any liability to torsion in the polar-frame produces the most serious unsteadiness of the telescope in hour-angle. This point requires the most careful consideration in planning the construction of the polar-frame.

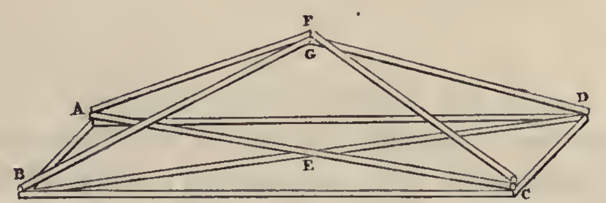
In the English mountings of small instruments, the polar-frame has usually consisted of four or six parallel pillars connected at their extremities with equatoreal plates, by flanges of great breadth. The resistance to torsion depends here entirely upon the proportion which the diameter of the flange bears to the length of the pillar. The form of polar-frame which I judged most convenient for this large instrument, was one consisting of wooden rods (Norway fir-poles), whose diameters are very small in proportion to their lengths. The principle of resistance to torsion, which applies to small instruments, is not valid here; and it became necessary for me to consider upon what principle a frame can be constructed to resist torsion, on the supposition that the connexion of the rods, &c., is of the same kind as the connexion of two links in a chain, or rather as the connexion of the two members of a ball-and-socket joint.

Suppose now two parallel rods to connect the upper and lower equatoreal planes by ball-and-socket joints. For the purposes of this inquiry, we need not to consider the whole of the two planes, but merely those material lines in them which join the points of connexion with the rods. Our object now is, so to arrange that the upper and lower equatoreal planes shall necessarily turn together, or so to arrange that the four rods connected by free joints shall always remain in one plane. Or (calling the four angles A, B, C, D; A being opposite to C, and B to D,) so to arrange that D shall always remain in the same plane with A, B, C.

It is evident that this condition would be secured, if we could connect A and C by an inflexible rod, and B and D by another inflexible rod, and could thus firmly connect these two inflexible rods at their crossing, (which we will call E). For, the rod AEC being inflexible, E will always be in the same plane with ABC; and, the rod BED being inflexible, and B and E being in the plane of ABC, D will also be in that plane.

But, as the theory of framing implies that all rods are flexible to a small degree, we cannot absolutely adopt the construction just mentioned; but, retaining its principle, we can use the following, which is equivalent. Instead of a single rod, AEC, use a combination of three rods in a triangular form, AC, AF, CF, forming the triangle ACF; and in like manner, instead of a single rod, BD, use three rods, forming the triangle BDG; and connect F and G firmly together. Then it will be seen that the location of A and C in a certain plane determines the height of F,

and therefore of G, above that plane; and the determination of the positions of B and G with regard to the plane, determines also that of D with regard to the plane; so that if once in it, it will always be in it. The following sketch represents the arrangement of rods in this, which may be considered the simplest anti-torsion construction.

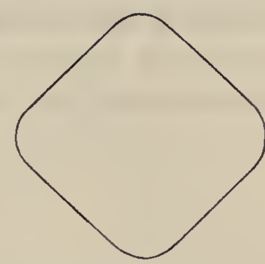


In the application of this construction to a frame of timber, a small modification is advantageous. It is difficult so to connect the ends of pieces of wood that they shall resist both pulling and pushing forces; and it is therefore necessary so to divide the strains, that the resistance to pulling forces shall be provided for by one connexion, and the resistance to pushing forces by another connexion. This can be done well by using another rod parallel to AD and BC, and passing through F and G, then inserting between it and AD and BC diagonals crossing AF, BG, &c., and giving to the diagonals no function except that of thrusting; the pulling together of the frame, so as to give firm bearing against the ends of these diagonals, being provided for by torsion-bands. In this manner the construction becomes a prism, consisting of three parallelogrammic sides, each side having cross-diagonals.

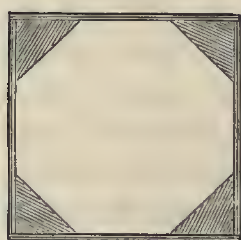
I have enlarged upon this subject because, though equivalent principles must have been adopted in many constructions, I have never seen them stated; and in communications with persons employed on, or familiar with the construction of instruments, I have never heard the subject of anti-torsion framing mentioned as one which they had ever contemplated. It is manifest, that, with due care in the application of this construction, any supposed difficulty in the English form of equatoreal mounting is completely removed. It will be found also that the adoption of this principle enables us to use rough workmanship, and to place it in the power of the observer to adjust the instrument, to make it firm, and even to change its form.

I had in several instances seen the convenience of adopting wood as the material for the construction of the telescope-tube, and had remarked its freedom from the quick tremors to which metallic tubes are liable. In constructing a temporary tube for trials of the object-glass, a singular appearance had presented itself, which I record here as likely to be instructive to others who may adopt the same material. The form of the tube was that of a square pyramid. On directing the telescope to a star, and adjusting the eye-piece to the position in which the principal image was a small point, this point was intersected by two crossing rays of great brilliancy, in the direction of the diagonals of the square tube. On pushing in the eye-piece, the broad cone of light, instead of being circular, had a square appearance, rounded

at the corners. The following sketches represent these appearances In order to dis-



cover their origin, I turned the flint-glass alone in its cell, the crown-glass alone in its cell, and both together; but the appearances remained absolutely unaltered. I was very much perplexed with this phenomenon; when at last, having by chance left the telescope several hours in the open air, I found that the rays had entirely vanished, and the cone of light was circular. It was evident from this, that the effect in question was produced by the warmth of the tube, when it was carried out from the warm room, in which it was kept all day, to the cold night-air. On considering the construction of the tube, I was led to the complete explanation. The sides of the tube were thin, and its angles were filled up with solid blocks; its general section being similar to the following:



The blocks at the angles remained warm when the sides had become cool, and a stratum of warm air was always in contact with their interior surfaces. The rays of light passing near them were therefore deflected too much towards the center. And this effect was greatly aggravated by the converging form of the tube, which kept a stratum of warm air close to these rays, through nearly the whole length of the tube. I would state, therefore, as a rule of prudence which ought to be followed in the construction of telescope-tubes, especially when made of wood, that the tube ought to be somewhat larger than the object-glass, that a conical or pyramidal form ought by all means to be avoided, and that there ought to be no remarkable difference in the thickness of the material on different sides of the tube.

I have already mentioned the difficulty which I had witnessed, and which in the autumn of 1835 I experienced in my own person, in the adjustment of the object-glass. This induced me to turn my attention to the construction of a mounting for the object-glass which should enable an observer at any time, while observing any star, to effect every possible motion of the two lenses of the object-glass.

Having witnessed the inconvenience and insecurity of a small declination-circle, and finding that a large one would cause far greater expense than I could sanction, and would give much trouble in its adjustment; I determined on adopting chord-

rods (connected with the polar-frame) as the support of clamps, which would (by graduations on the chord-rods) give the means of setting for any celestial object; and which by connecting the clamps, not with the telescope-tube, but with the end of a long bar turning upon a pin in the side of the telescope-tube, near its centre of motion, would enable me to give a very convenient slow motion, combined with perfect firmness in declination, and would also give the means of accurately measuring small differences of declination.

The use of clamps for the hour-circle, connected with a slow-motion-screw, which requires from time to time to be wound back, is so inconvenient, that I could not entertain the idea of adopting it. Having once determined on using a complete circle for receiving the action of the clock-work, I perceived that there would be great advantage in making this circle separate from the polar-frame, and in clamping the polar-frame to it when necessary. For thus the circle may be considered as a part of the clock-work; it may always represent in position the celestial equator; and the register of the position of the polar axis with reference to the circle will always give the right ascension of the body observed. And the determination of the difference of right ascension of two neighbouring objects (one of the determinations for which the equatoreal mounting is particularly well adapted) becomes *in form* a separate determination of the right ascension of each, made without the observation of transits over wires.

In arranging the clock-work for moving the equatoreal in hour-angle, I had no hesitation in adopting the principle of regulation by friction, having seen several instances in which that principle worked exceedingly well. For one part, namely, the going-fusee, I was obliged to prepare a new construction. I happened to be present at the trial of a large equatoreal on a very critical occasion, when the spring of the going-fusee broke. I then perceived the necessity of using a going-fusee which required no spring: and arranged for this purpose the construction described by me in the *Cambridge Transactions,* Vol. VII. page 217.

On the observing-chair, and other parts of the apparatus, I have little to remark, except that I have endeavoured so to arrange the whole, that the observer when seated in his observing-chair, and alone, should, as far as possible, be able to command the motions of every part.

Several additions have been made by Professor Challis, which in the following description of details I shall endeavour to point out accurately.

I shall now proceed with an explanation of the Engravings.

Figure 1, Plate I., is a general plan of the Observatory and the Northumberland Dome, for the purpose of shewing their relative position. The scale is $\frac{1}{1440}$.

A is the portico and principal entrance to the Observatory, fronting exactly south.

B is the dwelling-house of the Director of the Observatory.

C is the apartments of the Assistants.

D is the Transit Room.
E the Circle Room.
F the entrance to the Northumberland Dome.
G, *H*, *I*, the boundary of the Observatory grounds.

Figure 2, Plate II., is a ground-plan of the walls of the Northumberland Dome, shewing also, in projection on the horizontal plane, the south pier, the clock-work box, the south steps, the support of the north end of the polar axis, and the polar axis without the telescope. The scale is $\frac{1}{43}$.

A is the entrance door, exactly fronting the east.

B, *C*, are two ante-rooms.

D is the place of the window. This is the only window of the room: but, the inside of the dome being painted white, no necessity for other windows is felt.

E, *F*, are the two brick piers into which the two supports of the northern end of the polar axis are built. These piers are built upon foundations unconnected with those of the walls, and the piers are not at any part in contact with the walls. At the joining which is next the interior of the room the interstice is filled to a small depth with mortar, but with no hard material.

G,*H*, are two closets, formed by cutting off the two southern corners of the room.

It will be remarked that the plan of the walls is square, but that each of the side walls has (between its extremities) angular piers on the inside and corresponding pilasters outside. From these piers, arches are turned over the angles of the square room, so as to reduce it to an octagon, and these arches are filled up (leaving only a small recess) by the piers in the two northern angles, and by the closet-walls in the two southern angles. Similar arches, for ornament only, are turned in the wall on each remaining middle part of the four sides of the square. Thus the room, as seen from the inside, is a symmetrical octagon. The traces of these arches may be seen in Figure 67.

I, *J*, are the two wooden supports of the north end of the axis. They are common deals, 21 feet long, 11 inches broad, and 3 inches thick, with their edges turned exactly towards the center of motion of the telescope; they have been saturated with corrosive sublimate. They are built into the piers *E*, *F*, in a manner that will be described hereafter (Figure 36). Their lower extremities reach almost exactly to the angles of the piers *E*, *F*, at the level of the floor.

K is an iron triangle, connected by two projecting pieces (part of the same casting) with the two deals, and supporting the north end of the polar axis.

L is the inclined stone on which the south end of the polar axis rests. This stone is planted upon a brick pier, whose dimensions north and south are nearly the same as those of *L*, but east and west are about a foot larger on each side.

M is the iron box containing the clock-work which turns the equatoreal in hour-angle. Its dimensions are 2ft. 6in. by 1ft. 11in.: its height is 3ft. 4in.

N is a small plate, screwed upon the floor, and carrying the center-pin on which the observing-chair-frame turns in azimuth. (See *A* in Figure 60.)

O is the series of southern steps, intended for the support of the observer in the observation of low objects near the north, as the intervention of the polar-frame and its southern pier makes it impossible to turn the observing-chair-frame to those parts of the room. It will be remarked, that the east and west sides of *O* are not symmetrical: the reason of this is, that the chair-frame carries a ladder on one side (see *L*, Figure 60), and it is therefore unnecessary to provide fixed steps for the part which that ladder covers.

P is the frame of the polar-axis, supposing the telescope not inserted. Parts of this will be described in Figures 28 to 31, and 39 to 43.

The whole of the walls and piers are built in brick-work of the best quality. The northern piers *E* and *F* are cemented with Roman cement, and the southern pier (below *L*) is well grouted. The foundations on the south side are nearly ten feet below the floor: on the northern side they are much less. The thickness of the walls at the foundation is nearly three feet.

Figure 3, Plate I, is a plan of the top of the walls, shewing the wall-curb, the iron channel, the hold-fasts for securing the dome, and the fixed spikes for attachment of the machinery for slow motion of the dome. The scale is $\frac{1}{64}$.

AA is the external outline of the walls.

BB is the inner edge of the wall, where it is not covered by the wall-curb.

CC is the outer edge of the wall-curb.

DD is the inner edge of the wall-curb in those parts at which it falls within the angles of the walls. The form of the walls being octagonal (as described above), the circular curb is placed upon them in such a manner, that it somewhat overshoots the walls at the middle of each side of the octagon, and falls within them at each angle. The inner diameter of the wall-curb is 25ft. 8in.

EE is the iron channel, composed of 12 segments. Each segment is screwed upon the wooden curb by 8 screws on each side.

FF are the six free cannon-balls upon which the dome turns. Theoretically, three balls are sufficient: but practically, the slight yielding of the various parts of the dome will keep six balls in action, and then the frame of the dome will be less strained than if the bearings were upon a smaller number. The arrangement of the channel and balls will be seen in section in Figure 6.

GG are the four hold-fasts of the dome. Their construction will be explained under Figure 17.

H is the lever for ordinary quick motion of the dome, represented in Figure 14.

II, &c. are the pins to which the rope connected with the slow-motion-machinery of the dome is attached. One of these is seen at *O* in Figure 16.

Figure 4, Plate I, represents the mode of connecting the wall-curb with the wall.

AA is a bond-timber in the wall, at each angle of the octagon. Its whole length is about two feet on each side of the angle, its breadth nine inches, and its thickness three inches. Its upper surface is eighteen inches below the top of the wall.

BB are upright posts of the same section as *A*, at the distance of eighteen inches from the angle, securely connected with *AA*.

CC is the wall-curb, firmly connected with *BB*.

Figure 5, Plate III, is a plan of the lower dome-curb. Its diameter is the same as that of the wall-curb. The scale of the figure is $\frac{1}{64}$.

AA are the feet of the principal posts in one of the principal lines of beams.

BB are the feet of the posts in another principal line, parallel to the former.

It will be remarked that these posts, on one side, project beyond the external edge of the curb. This is the side on which the dome-shutters are placed; and this projection is for the purpose of giving hold for the hinges, and for making the shutter-openings water-tight.

CC are the feet of the posts in another principal line, transverse to the former.

The feet of the small uprights will be seen marked on the curb. Their number is twenty-eight.

The dimensions of the principal posts are 5 by $1\frac{1}{8}$ inches, excepting those which correspond to the shutter-openings, which are $8\frac{3}{4}$ by $1\frac{1}{8}$ inches. The dimensions of the smaller posts are 3 by $1\frac{1}{8}$ inches. The clear space between *A* and *B* is 29 inches, and this is the clear shutter-opening.

Figure 6, Plate III, is a section of the lower dome-curb, its iron channel, the wall-curb, its iron channel, and a cannon-ball between them. The scale is $\frac{1}{12}$.

A is the lower dome-curb. Its breadth is $8\frac{1}{2}$ inches, and its depth is $2\frac{1}{2}$ inches. It is made in two thicknesses, each thickness consisting of 12 segments, and these are laid so as to break joint with each other, and with the segments of the iron channel. The wood is fir.

B is the iron channel, with side-flanges, by which it is screwed to the wooden curb. The breadth of the concave channel is 6 inches, and its radius of curvature is nearly 7 inches.

C is the exterior, and *D* the interior of the wall-curb. It is similar to *A*.

E is the iron channel of the wall-curb, cast from the same pattern as *B*, and in all respects similar to it.

F is one of the cannon-balls, of $5\frac{1}{2}$ inches diameter.

G is one of the spikes fixed in the interior of the dome-curb, to receive the action of the lever by which the dome is turned in its ordinary quick motion, as will be shewn in Figure 14.

Figure 7, Plate III, is a plan of the upper curb of the dome to the same scale, $\frac{1}{64}$,

as Figure 5: exhibiting the places where the tops of the posts reach its lower surface. It will be remarked that the interval between *A* and *B* is the same as in Figure 5, these two principal lines being strictly parallel. The intervals between the other posts are diminished, in consequence of the diminution of the diameter of the circle. A portion of this curb is completely cut away, to leave the shutter-opening perfectly clear.

Figure 8, Plate III, is a plan of the upper surface of the same curb, shewing the feet of the rafters of the upper cone of the dome. The dimensions of the six principal rafters are the same as those of the six principal posts (see Figure 5); those of the smaller rafters are $3\frac{1}{4}$ inches by $\frac{3}{4}$ inch.

Figure 9, Plate III, is a section of the upper curb, to a scale of $\frac{1}{12}$. The breadth of this curb is 10 inches; its depth is $2\frac{1}{4}$ inches; it is made of American birch, in three thicknesses.

Figure 10, Plate IV, represents the two curbs and the principal posts and rafters as united. The letters *A*, *B*, *C*, are applied in this figure to the same parts as in Figures 5, 7, and 8.

The permanency of form of the dome, so far as it depends upon framing at all, depends entirely upon the pieces represented in this figure. They are therefore connected with much care. Where the six posts and six rafters meet the lower curb and the upper curb, they are connected by knee-pieces of strong plate-iron, which are bolted to the wood-work by bolts passing through and taking hold of iron plates on the opposite side. On the side of the shutter-opening, where the posts *A* and *B* unite with the rafters *A* and *B*, they are connected by flat plates of the proper form. The transverse principal rafters *C* are united with the rafters *A* and *B* in the same manner; and the horizontal part *CC*, which is between the two lines *A* and *B*, is connected with them by a single plate of iron on each side, which, being bent at both ends, applies to *A*, *B*, and *C*, and is bolted to all. The angles of the three lines of *A*, *B*, and *C*, are also strengthened by bars of iron, which are forked at each end to embrace the wood-work, and are bolted to it by bolts passing through all.

It must be remarked that the rafters *C* are not in the same plane with the posts *C*, or are not in a vertical plane. In order that the telescope may command all parts of the heavens, it is necessary that the shutter-opening should be carried nearly a foot beyond the center of the dome. This defines the place of the horizontal part *CC;* and the rafters *C* are inclined, to meet the rafters *A* and *B* at the same point, so as to make *CCCCC* a continuous line. This may be seen in Figure 67.

Figure 11, Plate IV, represents the frame of the dome, with all its posts and rafters mounted. The rafters in each half of the upper cone converge to the conical point on that side; some of them being cut to allow the principal rafters *C* to

retain their inclined position. On the side opposite the shutter-opening, there is one small rafter between the principals *A*, *B*, and parallel to them.

Figure 12, Plate IV, represents the frame as strengthened by the intersecting hooping-iron. The hooping-iron used for this purpose was the lightest that could be procured. I have no memorandum of its weight, but I believe that it was 4 ounces to each foot of length. Each of the hoops is secured to every one of the posts or rafters which it crosses, and its ends are turned under the lower curb, and over the upper curb, and there secured fast. This structure gives to the dome a degree of strength with lightness, which probably could be obtained in no other way.

The dome is covered with plates of zinc, which are laid upon beads fixed on the posts and rafters, in the manner in which plates of zinc are usually laid, so as to permit the thermal expansion and contraction of the metal. Each plate is also secured to the intersections of the iron hooping by small loops of zinc, shewn in this figure.

The frame of the dome was built together with the upper curb forming a complete circle, and the part of the upper curb interrupting the shutter-opening was then sawn away. I had thought it probable that the thrust of the rafters of the upper cone would have forced the upper curb into a portion of a larger circle; but on the contrary, the shutter-opening was diminished by a small fraction of an inch.

The stiffness of the frame is shewn by this circumstance. One of the six cannon-balls is smaller than the others by about $\frac{1}{12}$ of an inch in its diameter, and the dome-frame does not always yield sufficiently to press upon this ball.

Figure 13, Plate V, is an east and west section through the walls and the dome, exhibiting also a view of the polar-axis without the telescope.

AA are the walls.

B is the entrance-door from the passage between the two ante-rooms.

C is the wall-curb.

D, *D*, are the cannon-balls.

E is the lower dome-curb.

F is the upper dome-curb.

G is the upper shutter, taken in section just across the two vertices of the upper cone in Figures 10, 11, 12, or in the line *AB*, in Figure 21.

HH are the two piers into which the supports of the northern end of the polar-axis are built, corresponding to *E* and *F* in Figure 2.

II are the two deals for supporting the northern end of the polar-axis, built into *HH*; they correspond to *I*, *J*, in Figure 2.

KKK is the iron triangle at the top of the deals, corresponding to *K* in Figure 2.

LL are iron braces, strengthening the deals.

M is the southern steps, corresponding to *O* in Figure 2.

N is the stone on which the support of the lower end of the polar-axis rests.

O is the box containing the clock-work for moving the polar-frame in hour-angle.
P is the polar-axis frame.

Figure 14, Plate VI, is a view of the lever used for giving to the dome a quick motion.

A is the lower dome-curb.
B its iron channel.
C the wall-curb.
E its iron channel.
F is one of the cannon-balls.
G is an angle of the walls of the octagonal room.
H is an iron bar fixed into the bond-timber described in Figure 4, and strengthened by stays entering into other parts of the same bond-timber. It corresponds to *H* in Figure 3.
I is the lever, turning loosely upon the end of *H*. Its upper end is armed with iron; its lower end is at a convenient height for the application of the hands.
KKK are pins fastened to the inside of the dome-curb, corresponding to *G* in Figure 6.

To move the dome in either direction, the iron end of the lever *I* is made to press against one of the pins *K*. As soon as the dome has moved so far that the inclination of the lever is inconvenient to the hand, the iron end of the lever is disengaged from that pin, by pressing the lower end of *I* towards the wall, and then the iron end is made to press against another pin *K*. The dome is thus made to revolve with great rapidity, by very small exertion of the arms.

The motion of the dome appears at first very singular. When the force of the lever is applied to one of the pins *K*, that part of the dome begins to move instantly, but the part opposite to it does not move at all for a short time, and the intermediate parts move transversely to the channel at those parts. (The facility of moving the dome depends entirely upon this transversal motion; for, in whatever way the dome is mounted, the effort to take transversal motion at those parts is the same; and if the mounting were of such a nature as to resist that transversal motion, it could make its resistance effective only by introducing a strong lateral pressure upon the dome, which would be accompanied with considerable friction). The curved form of the channels, however, gives the dome an immediate tendency to resume its proper position at those parts, and this tendency causes the opposite side of the dome to progress. The irregularity of motion is lost in two or three seconds of time.

In the construction of the iron channels, I omitted to give directions that holes should be made in a few places for draining off the water which is occasionally deposited in them. In general the water produces no inconvenience except the oxidation of the surface: but in the winter the water becomes frozen, and the ice offers a sensible resistance to the motion of the dome.

Figure 15, Plate VI, is a plan, and Figure 16, Plate VI, is a perspective view, of the apparatus by which slow motion is given to the dome. The same letters apply to both.

A is the long shaft of a handle for turning the wheel-work. This shaft is tubular, having a long slider within it, whose end is connected with *D*. By means of a groove along the slide, and a stud projecting into it from the tube, the slider and the tube are made to turn together. The length from *B* to *D* is about 6 feet 6 inches, when the slider is thrust in close: but when it is drawn out to the utmost, the length is nearly doubled.

B is a loose tube of wood.

C is the winch. In turning the shaft, *B* is held in the left hand, and then becomes a center of motion while the winch *C* is turned by the right hand.

D is a universal joint.

E is a pinion, working in the bevelled wheel *F*.

G is a pinion on the same axis with *F*, working in the wheel *H*.

I is a barrel connected with *H*.

K is a latch for keeping the wheel-work in gear. On lifting *K*, the spindle carrying *F* and *G* can be drawn to the front, so as to disengage those wheels from the others.

L, *L*, are two pullies fixed to the dome.

M, *M*, are two ropes fastened to the barrel *I*, and passing from it in opposite directions round the pullies *LL*. By turning the wheel-work, therefore, one of these ropes is relaxed, and the other is stretched.

N is a small plate, with a hole in its center, and rings at its ends. The two ropes *MM* are permanently fastened to the two end-rings of *N*. When the machinery is in use, the hole of *N* is slipped upon *O*, one of the pins fixed to the wall-curb or wall-plate.

O is one of these pins, corresponding to *IIII* in Figure 3.

P, *Q*, and *R*, are holdfasts by which the frame of the wheel-work is fixed to the dome.

It will be seen, therefore, that the wheel-work and the two pullies *LL* travel with the dome, and that the pin *O* and the piece *N*, which for the time is fastened to it, are fixed to the wall. Consequently the turning of the barrel *I* by means of the winch *C*, as it alters the relative position of *L* and *N*, will make the dome revolve. This apparatus answers in all respects the same purpose as the ordinary clamp and slow-motion-screw in astronomical instruments: there is just friction enough in it to hold the dome still, but by turning the winch *C* the dome may be moved slowly with very great ease. The winch *C* is carried to the chair of the observer; and thus in a long scrutiny of the same object he can, without leaving his place, turn the dome to follow the object.

Figure 17, Plate VI, is a perspective view of one of the hold-fasts for securing the dome when no observations are going on. There are four hold-fasts; their places are marked in Figure 3 by the letters *GGGG*.

AA are two supports fixed in bond-timbers.

B is a strong support, well fixed to the dome-curb.

C is the vertical shaft.

D is the winch by which it is turned.

E is a hook for preventing *D* from being turned out of position by accident, or by the shaking of the dome.

F is a mushroom-head, consisting of two short cylinders; the upper is the broader, being $5\frac{1}{2}$ inches in diameter; and both are eccentric. When the hold-fast is in the position represented in the figure, (which is the position for securing the dome) the upper cylinder presses upon the top of the dome-curb, and the lower cylinder presses the inner side of the dome-curb.

G is the dome-curb.

The use of this apparatus is to prevent the dome from receiving a small oscillatory motion. The dome is moveable on its balls, either in the direction of its revolution, or in a direction which (at certain parts) is transverse to the channel, by a very small force. If a motion of the latter kind be communicated to it, it speedily returns; but then, as in other cases of oscillation, if a force act by impulses nearly following the periods of oscillation of the dome, a very great motion may be given to it, which no obstacle could stop, and which will end by throwing the dome and the balls completely off the walls. A very small resistance, however, is completely sufficient to prevent the first small motion from being given to it. This resistance is supplied by these four hold-fasts.

In the heavy gale of the 23rd January 1836, when the dome was nearly finished, but before the hold-fasts were constructed, the dome was blown about 7 feet from its proper position, and was only saved from being completely carried off by lodging upon one of the deals *I* in Figure 13. Since the hold-fasts were constructed, it has been exposed to many gales without the smallest appearance of danger.

Figure 18, Plate VII, is a horizontal section across the lower shutter, on a scale of $\frac{1}{16}$, to shew the arrangement of the irons by which it is opened and shut from the inside. It is to be remarked that there are only two shutters: one extending from the lower curb to the upper curb, and the other extending from the upper curb to the extremity of the shutter-opening; and that both shutters turn on hinges in the manner of doors. Figure 18 supposes the shutter closed.

A and *B* are the two principal posts corresponding to *A* and *B* in Figures 5, 7, and 10.

C is the hinge-piece projecting from *B*.

DE is the shutter, which is merely a frame crossed with hooping-iron and covered with zinc-plate.

F is the hinge-piece for the interior iron, fixed to *B*.

G is the iron which turns on *F*.

HI is an iron which is jointed at *H* to *G* and at *I* to the shutter.

K is a rope for securing the shutter when closed.

L is a sort of pyramid of four wires, attached to the shutter in order to prevent its tension.

The same description would apply to the upper shutter, supposing the section perpendicular to its plane.

Figure 19, Plate VII, is a section of the same shutter supposed to be wide open. The same letters apply to this figure as to Figure 18. On comparing these two figures, it will be seen that the movement of opening is effected by giving a movement of turning to the bar, whose pivot is at *F*, (but whose projection on the section is concealed by the hinge-piece *F*), to which the iron *G* is attached. The moving apparatus is thus entirely within the dome. The form given to the shutters makes them perfectly water-tight.

The only inconvenience attending this construction is that the shutters, being when fully opened in a position nearly at right angles to the side of the dome, are exposed to the wind; and that, if the dome is not secured either by the hold-fasts described in Figure 17, or by the machinery described in Figure 16, it may be carried round by the wind: in which case any dependent handles, &c. of the dome would pull down or greatly injure any thing of which they might take hold. No inconvenience has been felt from this circumstance, as the most ordinary caution is sufficient to prevent it: and in the high winds which might more seriously endanger the shutters or dome, the state of the sky is such that there is no possibility of making observations. Nevertheless, if I had occasion again to construct a dome of large dimensions, I think that, at the risk of losing some of the advantage of perfect dryness which is given by this construction, I should endeavour to make the shutters slide laterally. This may be done without great difficulty, by attaching a rack to the upper edge of each shutter and another to its lower edge, and causing two pinions to work in these racks, these pinions being upon the same spindle, which spindle should be parallel to the shutter-post and as close to it (within the opening) as it could be conveniently placed.

Figure 20, Plate VII, represents the form of the upper shutter. The shorter part covers that part of the opening which is beyond the center of the dome. The hinges are both in the longer part.

Figure 21, Plate VII, is an interior view of the two shutters, to shew the arrangement of the irons for opening them (omitting the lower parts of those irons, the check upon the order of opening the shutters, and the wheel-work.)

AAA is one of the lines of principal posts and rafters.

BBB is the other, parallel to *AA*.

CCC is that which is transverse to them.

D is the interior spindle of the lower shutter, (whose projection is concealed at *F* in Figures 18 and 19.)

E is the interior bar (corresponding to *G* in Figures 18 and 19.)

F is the jointed iron (corresponding to *HI* in Figures 18 and 19.)
G is the lower interior spindle of the upper shutter.
H is a strong universal joint.
I is the upper interior spindle of the upper shutter, connected with *G* by the joint *H*.
K is the interior bar (corresponding to *G* in Figures 18 and 19.)
L is the jointed iron (corresponding to *HI* in Figures 18 and 19.)
M, *M*, are counterpoises for the weight of the upper shutter.

The movements of the two shutters thus depend on the turning of the two spindles *D* and *G*, which are parallel and only a few inches apart.

Figure 22, Plate VII, is a view of the lower part of the interior spindles *D* and *G*, and of the machinery connected with them.

A is the dome-curb.
B, *C*, are hold-fasts for the frame of the machinery.
D is the interior spindle of the lower shutter.
E is the top of the corresponding spindle of the wheel-work, shaped into four small projections, to take hold of the T-head at the end of *D*, and to admit of being detached easily.
F is a crooked bar attached to *D*, being part of the apparatus by which the order of opening and shutting the two shutters is determined: (to be described in Figures 23, 24, 25.)
G is the lower interior spindle of the upper shutter.
H is the top of the corresponding spindle of the wheel-work.
I is a crank-shaped projection of *G*, being part of the apparatus affecting the order of opening the shutters (Figures 23, 24, 25.)
K is a latch to prevent the pieces *F* and *I* from moving from their present position (which corresponds to that of both shutters open). In order to close either of the shutters it is necessary first to lift the latch *K*.
L, *L*, are two universal joints for the attachment of the winch-shafts.
M, *M*, are two loose tubes of wood, to be held in the left hand as centers of motion, while the right hand is employed in turning the winches *NN*.

The wheel-work requires no particular explanation; it will be seen that, by virtue of its mechanical power, a small effort on the winches *N*, *N*, will produce a very great turning force on the spindles *D* and *G*.

The shafts *LM* are about 8 feet 3 inches long, between the universal joint and the loose tube, depending to a height which is convenient for the hands.
The bars *D* and *G* are about an inch square.

Figures 23, 24, 25, Plate VII, are intended to explain the effect of the projecting irons, *F* and *I*, of Figure 22, by exhibiting them (in plan) in different positions. It must be remarked that the lower part of the upper shutter completely covers

the upper edge of the lower shutter, in order to shoot the rain off it. The upper shutter therefore must be always opened before the lower is opened. The upper shutter, however, can be opened without opening the lower. If any attempt were made to open or shut the shutters in a different order, they would infallibly be broken. It is proper therefore so to arrange the machinery, that the parts which are nearest to the hand cannot be moved in any other order than that which fulfils the conditions of opening the upper shutter before opening the lower, or closing the lower before closing the upper. The projecting pieces F and I effect this.

Figure 23 represents the irons in the position corresponding to both shutters closed. To open the lower shutter, the point of F must be turned downwards (on the paper), but this cannot be done, because it is stopped by the point of I.

Figure 24 represents the irons in the position corresponding to the upper shutter open, and the lower closed. I is now turned away, so that F can be turned.

Figure 25 represents the irons when both shutters are opened. The curved part of F has now wrapped round the crank-rod of I in such a manner that I cannot be turned back to the position of Figure 23 (or the upper shutter cannot be closed) until F is turned back (or the lower shutter is closed).

Figure 26, Plate VIII, is a general view of the building and dome from the north-east. The shrubs at the left hand are at the boundary of the Observatory grounds.

Figure 27, Plate VII, is a plan of the metallic work attached to the inclined stone which is planted on the south pier for the purpose of supporting the lower pivot of the polar-axis, on a scale of $\frac{1}{12}$.

Figure 28, Plate IX, is a plan of the polygon forming the lower end of the polar-axis, and of the large equatoreal circle, on a scale of $\frac{1}{12}$.

Figure 29, Plate IX, is a view of the polygon and the large equatoreal circle.

Figure 30, Plate X, is a view of a small portion of the polygon and equatoreal circle on a larger scale.

Figure 31, Plate X, is a section of the polygon, the equatoreal circle, the pivot of the polar-axis, and the support of the pivot.

The following explanation applies to all these five figures: the same letters corresponding to the same parts in all.

A is a plate of iron screwed to iron plugs in the stone. Upon the middle of A is a raised block, seen only in Figure 31.

B is an inverted dish, 18 inches square, which rests upon *A*, and carries the socket in which the pivot of the polar-axis turns.

CCC are eight screws, tapped in the sides of *B*, and pressing with their points against the sides of the raised block of *A*. By means of these, the socket of the lower pivot is adjusted in position.

DD are four screws tapped in the upper flat of *B*, and pressing with their points on the flat of the raised block of *A*, so as to tilt the socket a little, if necessary.

E is the socket-piece, screwed upon *B*.

F is the pivot of the polar-axis, $3\frac{3}{4}$ inches in diameter.

G is a screw in the side of the socket, of which no use has been made.

H is a friction-wheel, partly supporting the pressure of the pivot. Its axis is carried by a strong spring, concealed in the figure by the radii of the friction-wheel.

II are screws supporting the end of the spring.

KK are the radii of the polygon. The polygon is of cast iron; it is an irregular hexagon, its longest diameter being about 7 feet. The declination-axis is parallel to this longest diameter. The depth of the radii varies from 7 inches near the center, to 4 inches near the outside, and their thickness varies from 1 inch near the center, to $\frac{3}{4}$ inch near the outside. These are the thicknesses at the upper part; those at the lower part are less by $\frac{1}{4}$ inch.

LL are the sides of the polygon. Their depth is 4 inches, their thickness at the top about $\frac{3}{4}$ inch, and at the bottom about $\frac{1}{2}$ inch.

The artist who constructed the polygon was unable after repeated trials to cast it so that it would not break in cooling. One of the long radii in this is broken very near to the outside, but it is strengthened by knee-pieces in such a manner that (in the estimation of the workman) it is as strong as if it had been cast whole.

MM are the six cells for the reception of the feet of the poles forming the sides of the polar-frame. They are nearly six inches in diameter, and each has two small recesses at its sides for the bolts at the sides of the poles; these bolts pass through the bottoms of the cells.

NN are the twelve abutment-cells for the feet of the braces of the polar-frame. The position of these abutment-cells, as shewn in Figures 28 and 29, will indicate the planes in which the braces act.

OO are the radii of the equatoreal circle.

P is its flat limb, on which the graduations are traced. The diameter of its outer circumference is 5 feet 5 inches. It is made of bell-metal, and is cast in one piece. It is racked all round the edge, for the screw *Z*, which is driven by the clock-work.

Q is the clamping-ring of the circle, standing up perpendicular to its plane, to be grasped by the clamps *RR*.

RR are the two clamps. Only one was at first constructed; but Professor Challis found it convenient to apply another to the opposite side. These clamps are carried by the polygon, being moveable upon the shortest sides of the polygon by slow-motion-screws, and grasping the ring *Q* by means of clamping-screws.

SS are the clamping-screws.

T is the slow-motion-screw, which is tapped in a piece of metal carried by the polygon (attached to it by the screws *ee*, Figure 30) and presses with its point upon the clamp-piece.

U is the case containing the strong spiral spring, which drives the clamp-piece to bear against the point of *T*.

V is a bevelled-wheel-work, for the more convenient application of the hook's joint, by which the observer turns the slow-motion-screw *T*.

W is a micrometer-microscope, carried by the polygon, for reading and subdividing the divisions of the circle. This was attached by the direction of Professor Challis.

X is a spindle from the clock-work, which turns the screw *Z*.

Y is a screw-clamp, connecting *X* with the axis of the screw *Z*. It is of no use here.

Z is the screw which works in the racked edge of the equatoreal circle, and therefore gives a motion in hour-angle to it, and to the polar-frame, if either of the clamp-screws *S* is tightened.

a is the piece of metal, attached to the stone, which carries the clock-work-screw *Z*.

b is a small lever for putting the screw in or out of gear with the racked edge of the equatoreal circle.

c is the universal joint connecting the screw *Z* with the spindle *X*, through the intermediation of the clamp *Y*.

d (Figure 30) is the piece attached to the polygon-side, which carries the micrometer-microscope *W*.

ee are screws connecting the bearings of the slow-motion-screw *T* and spring *U* with the polygon-side.

f is the point of the clamp-screw *S*.

g is a reflector for illuminating the divisions of the great circle, as viewed by the microscope *W*.

h is a vernier carried by the polygon-side, for subdividing the divisions of the great circle; its use is in a great measure superseded by that of the microscope.

k (Figure 31) is a key passing through the great pivot, and sustaining the large equatoreal circle.

The use of the circle may now be explained. Suppose that, at the commencement of a series of observations, the clock-work is put in action, and the sidereal time

noted. Then the screw *Z* ought to be detached from the racked edge; and the large wheel, freed from the clamp *R*, ought to be turned so that the reading of the lowest part of its divided edge is the same as the sidereal time, or so that the reading of the highest part (shewn on a small vernier carried by the plate *a*) differs 12^h from the sidereal time; and the screw *Z* ought again to be put in gear with the racked edge. Then the reading of the lowest part, as carried by the clock-work, will always be the sidereal time, or the right-ascension of the meridian; and therefore the reading of that part of the circle which may happen to be under the vernier *h*, will be the right-ascension of any body to which the telescope is directed. Thus the instrument gives at once the apparent right-ascension of any object without any observation of a transit. This gives great facility in setting for an object. And though the right-ascension may be in some degree in error (as well from the usual index-errors as from the flexures to which an equatoreal frame is liable), yet the right-ascensions of two objects within a few degrees of each other, will be affected sensibly by the same error. And by reverting from one object to the other (which is done with ease, because it is merely necessary to set the vernier *h* to the right-ascension of the object), even the small error in the speed of the clock-work is completely eliminated.

Figure 32, Plate XI, is a plan of the clock-work, to a scale of $\frac{1}{5}$

Figure 33, Plate XI, is a view, exhibiting more completely its regulating part.

Figure 34, Plate XII, is a view of the going-fusee; supposed to be detached.

As the same letters correspond to the same parts in these, they may be described together.

A is the iron box inclosing the machinery.

B is the iron frame which carries the machinery.

C is the frame forming a bent lever, which carries the pivots *HH* of the barrel, which gives abutment to the clicks *ss* that act on the internal ratchet *u* of the barrel-wheel, and which sustains the strain of the return *t* of the weight-line.

DD are the pivots of the lever-frame *C*, turning in the frame *B*.

E is the point at which the return *t* of the weight-line is attached to the lever-frame *C*.

FFF is the spindle of the winding-up-wheel *G*, turning in the frame *B*.

G is the winding-up-wheel. While the clock is going in its usual way, *G* turns in the direction indicated by the arrow; in order to wind up the clock, it must be turned in the opposite direction.

HH are the pivots of the barrel, turning not in the frame *B*, but in the lever-frame *C*.

I is the barrel.

K is the cord fastened to it and wrapped round it, and descending on the side nearest to *F*.

L is a toothed-wheel attached to the barrel, and working with the winding-up-wheel *G*.

M is the barrel-wheel.

N is the pinion of the next wheel, driven by *M*: the spindles of *M* and *N* being in the same horizontal plane.

We may here conveniently describe the action of the going-fusee. The weight *w*, by means of the pully *v*, exerts a tension both upon *t* and upon *u*. The latter acting on the barrel *I*, which is prevented from moving with more than a certain speed by its engagement with the pinion *N*, produces a certain pressure on the pivots *HH*, which are carried by the horizontal arm of the bent lever. The former (the tension on *t*) exerts a strain on the inclined arm of the bent lever. The bent lever then will take a position in which these strains produce equilibrium. And this remains constant during the ordinary going of the clock; and as the barrel *I* revolves, driving the barrel-wheel *M* by means of the usual click *z*, the teeth of the internal ratchet *a* pass successively under the clicks *ss*.

Now as soon as the spindle *F* and the winding-up-wheel *G* are turned in the direction opposite to that shewn by the arrow, the motion of the wheel *L* is reversed, and the teeth of the small ratchet pass under the click *z*. As the circumference of the wheel *L* is as nearly as possible the same as that of the barrel at the place of action of *u*, it is evident that the upward action of the teeth of *G* upon those of *L*, to such a degree as to lift the cord *u*, produces just the same effect on the barrel as if the strain of *u* were for the time annihilated. This strain being annihilated, the pressure upon the pivots *HH* is annihilated. Consequently, in the bent lever, the strain of *t* upon *E* immediately preponderates, and would instantly lift the pivots *HH*. But as soon as that motion begins, the click *s* lodges in the teeth of the internal ratchet *a*; and *E* descends very slowly, lifting the pivots *HH* very slowly, without permitting the wheel *M* to turn relatively to *C*, and continuing the action upon the pinion *N* by means of that lever-motion in which *C* and *M* move as in one piece. As soon as the winding-up-strain on *G* is relaxed, the renewed strain of *u* again exerts a pressure on *H* which preponderates over the pressure of *t* upon *E* (the effect of which is now somewhat diminished by the inclination of the bent lever) and the lever is thrown into its former position, and the clock goes on as before.

O is the second wheel on the same axis with *N*.

P is the pinion of the third wheel, driven by *O*.

Q is the third wheel.

R is the pinion driven by *Q*.

S (Figure 33) is a contrate wheel, on the same spindle with *R*.

T is the pinion of the ball-spindle, driven by *S*.

U is a fly attached to the ball-spindle.

V is a screw at the top of the ball-spindle.

W is the wheel in which it acts; this wheel is attached to the spindle *X*, (represented by the same letter in Figure 28), which carries the screw that

moves the equatoreal wheel. Immediately below V, a small dish of oil is carried by the ball-spindle, to lubricate the teeth of W.

Y and Z (Figure 32) are the same as in Figure 28.

a is a small catch for pressing a gentle spring against the circumference of the fly, in order to stop the clock.

bb are the centrifugal balls.

c (Figure 32) is the universal joint on the spindle to the screw for the equatoreal wheel, as in Figure 28.

d is the forked extremity of a light lever, embracing the square spindle of the winding-up-wheel: its object shall be described under y.

e is a slider on the ball-spindle, which is raised by the spreading outwards of the balls b.

f is a forked lever, with pins projecting into a channel grooved round e.

g is the fulcrum on which f turns.

h is a bar by which f acts upon another lever i.

k is the fulcrum on which i turns.

l is a slider on the fixed bar q, supporting k.

m is a smooth wheel fixed to the ball-spindle, on the under-side of which the lever i exerts a pressure.

n is a counterpoise to the weight of the lever i.

o is a screw with graduated head, for drawing up the wedge-shaped piece p, (see the small figure below Figure 33).

p is a wedge-shaped piece which supports the slider l that carries k, the fulcrum of the lever i.

q is a fixed bar of the clock-frame, supporting the wedge p and the slider l, as well as other parts of the wheel-work.

The action of the regulating part of the clock-work is as follows. When the speed of the clock increases, the balls bb expand, and raise e, f, h, and i; and when the speed has reached to a certain amount, the curved part of the lever i is pressed upwards against the lower surface of the wheel m, and the retardation produced by this friction prevents the velocity from becoming greater. At this limiting speed, the balls revolve once in a second of time, very nearly. In order to increase the limiting speed, the wedge p must be pushed further inwards by means of the screw o; then the slider l and the fulcrum k will drop, and a greater expansion of the balls b (which implies a greater speed of rotation) will be necessary to make the lever i touch m. In order to diminish the limiting speed, p must be drawn towards o.

Professor Challis has found that the rate of the clock is altered in a very small degree by the want of balance of the telescope (which is sometimes considerable). I think it probable that the upward motion of the pressing part of i is made too small relatively to the expansion of the balls b, so that in the gradual approach of i to m, the increase of friction, from contact with oil and dirt, is rather too gradual: and that the clock would therefore be improved by an alteration of the levers which

would carry the upper joint of *h* further from the fulcrum *g*. The movement of the clock is, however, extremely uniform.

r is a small bell; a hammer will be seen above it, which strikes the bell frequently when the clock-weight has nearly run down. The mechanism for this purpose (not exhibited in the drawings) is very simple: the cord *u*, when its unfolding coil approaches one end of the barrel, presses a lever sideways, which turns the catch of the small hammer into such a position, that some pins upon the wheel *Q* raise it, and cause it to strike the bell in its fall.

The following are portions of the going-fusee, Figure 34.

ss are the two clicks abutting on the lever-frame *C*, and lodging in the teeth of the internal ratchet *α*. The two clicks fall alternately into teeth of *α*.

t is the cord attached to *C*.

u is the other part of the same cord, which higher up is wrapped round the barrel.

v is the pulley, and *w* the weight. The weight at present upon the clock is 688 lbs, and it descends in one hour 3 feet 5 inches.

x is the point of a lever, turning on the fulcrum *y*; the stud at the end of *x* is immediately under the clicks *ss*; the other end of the lever is *d*, and this is pushed outwards by the spring β. In the ordinary going of the clock, the spring β presses the end *d* nearly to the point of the square spindle *F*, and the end *x* then raises the clicks *ss*, and thus prevents the disagreeable noise of the continually-repeated fall of the clicks, as the teeth of *α* pass under them. But when the winding-up-key is pressed upon the square spindle *F*, the fork *d* is driven to the position shewn in Figure 34, and *x* is brought so low that the clicks *ss* can fall into the ratchet, and can thus exercise their proper function in maintaining the going of the clock. The winding-up-key is large, with four winch-handles.

Figure 35, Plate X, is a small apparatus, attached by Professor Challis, for assisting the hour-angle-movement of the polar-axis, when it is in unusual need of assistance. This apparatus is fixed to the frame of the south steps, near to the box of the clock-work.

A is a weight.

B is a pulley under which the cord *C* passes. One end of *C* is carried by small pullies and rollers to be attached to the polar-axis at any convenient point *D*; the other end is wrapped round a small windlass *E* with ratchet and winch, by which the weight can be raised when it has dropped too far, without disturbing its action on *D*.

Figure 36, Plate XII, is a sketch of the support of the upper or north end of the polar-axis.

HH are the two north piers, built independently of the walls; they correspond to *E* and *F* in Figure 2. A small chamfering of their faces at the top, to

prevent them from interfering with the arches that cut off the corners of the square room, is not represented in the figure.

II are the deals built into the piers, and having their edges carefully turned towards the center of motion of the telescope.

KKKKK is the cast-iron triangle with its two projections for attachment to the outside of the deals. All its various parts are turned edgeways towards the center of motion of the telescope.

LL are the wrought-iron braces. At the top they are connected with plates of iron which are bolted through the deals to the projections of *K*. At the bottom they are connected with plates of iron which are also bolted through the deals to opposite plates.

MM is one of what may be called the *roots* of the deals. As no memorandum of the form of these roots has been preserved, and as they are now perfectly concealed in the brick-work, it is possible that in describing them merely from memory, I may commit some trifling error. They are however nearly as follows. At the level of the floor there is laid a triangle, *M*, of stout iron plate, as large as can be placed in the plan of the pier. Firmly connected with this are two plates, *OO*, embracing the deal, and fastened to it by bolting through ; and two braces *N* connecting these plates with the front angles of *M*. Upon these irons the bricks and cement are laid in such a manner, that it is next to impossible that the deal should be disturbed in its position among them.

PPP is another triangle, at a place near the middle of the pier (in height). The angles of this are connected by braces *QQQ* with the plates *RR*, which embrace the deal and are bolted through. Upon these irons the upper parts of the brick-work are carefully laid.

The support of the northern end of the polar-axis is extremely firm. It is entirely free from the lateral tremor which I have witnessed in the upright iron support of a large equatoreal.

Figures 37 and 38, Plate X, represent the upper pivot of the polar-axis, and its immediate support.

K is the iron triangle.

L is the brass plate screwed upon *K*.

M is the *Y* in which the pivot *N* turns.

O is a collar pinned to *N*, to prevent the pivot from slipping out of the *Y* in any accidental disturbance.

P is a friction-wheel.

Q is one of two powerful springs by which it is pressed upwards.

Figure 39, Plate XIII, represents one of the principal poles or beams of the polar-frame.

A is the pole whose ends lodge in the cells *M* of the polygon, Figures 28, 29, 31.

BB are iron straps, two at each end, which are fixed to the pole by bolts *CC* passing through them.

DD are the ends of the iron straps cut into screws for nuts. These screws pass through the small holes by the side of *M*, Figure 28, and the nuts are applied below the iron polygon, so that the poles are firmly drawn into the cell.

The length of each pole is 21 feet 2 inches; its diameter at the thickest part $5\frac{1}{2}$ inches. They are cut from Norway fir-poles. Before they were mounted, their external surfaces were repeatedly painted with linseed oil.

Figure 40, Plate XIII, represents one of the braces.

A is the brace, 3 inches square.

B is a cast-iron socket, with a projecting heel.

C is a strong bolt, 1 inch in diameter, tapped in the heel. The use of this bolt is, by being driven, virtually to lengthen the brace, or to exert a thrusting force at each of its ends. The bearing of the braces in the cells *N*, Figures 28, 29, and 31, is upon the points of the bolts *C*.

Figure 41, Plate XIII, represents one of the iron straps.

AA are the two portions of the strap. The iron is $1\frac{1}{2}$ inch broad, and $\frac{3}{10}$ inch thick.

BB are the short bolts with nuts, by which the portions *A*, *A*, are drawn together, to shorten the strap.

These three parts (pole, brace, and iron strap) may be considered as the three elements of which the polar-frame is constructed. In order to understand the following description, the reader must conceive that the polar-frame consists of two framed pillars (one supporting each end of the declination-axis), and that each of these framed pillars consists of a framed triangular prism. The separation of the pillars will be well seen in Figures 2 and 13; and it will also be distinctly indicated by the directions of the cells *NN*, in Figure 28, which mark the planes of the braced sides. Each of the prisms has two external sides and one internal side; the two external sides are similar, but the internal side is different from them.

Figure 42, Plate XIII, represents one of the external sides of one of the prisms.

AA are poles, with their drawing-screws *B*.

CC are braces, with their sockets *D*, and thrusting bolts *E*.

FF are the portions of the iron strap, with its drawing bolts *G*.

L, *M*, *N*, have the same meaning as in Figures, 28, &c.

The braces *CC* have abutments in *AA*, and are driven firmly to these abutments by forcing the bolts *EE*, or by screwing the strap-bolts *G*.

Figure 43, Plate XIII, represents the internal side of one of the prisms. The arrangement of its parts differs from that of Figure 42 only in this respect, that it is necessary to have two straps *F*, instead of one, because the declination-axis passes through the middle of this side.

The reader who has made himself familiar with the principle of resistance to torsion, as laid down in the introduction, will perceive that each of the framed triangular prisms thus constructed is (when all its bolts are tight) able to resist torsion, and consequently that the polar-frame, consisting of the union of these two prisms by two similar polygons at their ends (one at the upper end, the other at the lower end), is able to resist torsion. It is also easy to see that, by proper management of the bolts, the form of the polar-frame may be very sensibly changed. Suppose, for instance, it were required to force outwards the middle part of the external pole of either prism. This would be accomplished by relaxing the straps that take hold of that middle part, and forcing the thrusting bolts of the braces which abut at the same part. Suppose it were required to change one of the sides from a rectangle to a rhomboid, or *vice versa*. All that is necessary is, to relax the thrusting bolts of two braces whose bolts lodge in cells at one angle of the rectangle, and to force the two brace-bolts which lodge at the other angle of the rectangle. It is supposed that all the bolts of the upper half of the braced sides are relaxed for any operation of this kind. After the completion of the operation for the lower half, all the bolts of the upper-half are to be tightened. When the polar-axis was first mounted, it was necessary to go through a series of adjustments of this kind, in order to give the proper position to the lower pivot, and the proper width for the reception of the declination-axis. After this the bolts were all forced tight.

I have only to add to this account of the polar-frame, that I believe from the report of Professor Challis, and from my own trials, that it entirely fulfils the intention of its construction, and that it is perfectly firm in the resistance to torsion, as well as in resistance to general flexure. And I conceive that the same principle may be advantageously adopted, with alteration of details, in the polar-frames of other equatoreals. In an instrument so large as this, I think the adoption of thrusting-pieces for the diagonals and drawing-straps for the sides of the rectangles is probably best. But in a smaller frame it might perhaps be found convenient to use thrusting-pieces for the sides of the rectangles, and drawing-pieces in great number (forming a lattice-work of hooping-iron or of laths) for the diagonals.

Figure 44, Plate XIV, represents the telescope-tube. It is constructed of wood.

A, A are the planks forming two sides of the telescope-tube. The tube is nearly 19 feet long; the planks are 1 inch thick near the middle of the length, and $\frac{1}{2}$ inch thick near each end. A section at the middle of the telescope is a square of $13\frac{1}{2}$ inches. The tube was made square in its whole length, and then the corners were chamfered off, and the holes thus formed were stopped up with triangular pieces of wood, so that the ends are regular octagons.

Upon each octagonal end a brass ring 3 inches broad is screwed, for the attachment of the optical parts.

B, *B*, *B*, *B*, are square stops within the tube, to which the four planks are screwed.

C, *C*, are the triangular pieces stopping up the holes which were made by chamfering the square tube so as to form octagonal ends.

D, *D*, are the brass rings at the ends.

Figure 45, Plate XIII, represents one half of the declination-axis. It is made of cast-iron. The two halves are precisely similar, and were cast from the same pattern.

A is the pivot, with a narrow mushroom-head. Its diameter is nearly $2\frac{3}{4}$ inches, and its length is nearly the same.

B, *B*, are plates of iron (in the same cast) for strengthening the connexion of the pivots with the center.

CC is the trough which embraces half the telescope-tube, the other half being embraced by the other half of the declination-axis. The length of this trough, or the extent through which it embraces the telescope, is 4 feet.

DD are edge bars (in the same cast) to strengthen the trough.

EE are holes in a flange, through which bolts pass to connect the two halves of the declination-axis.

Figure 46, Plate XIII, represents the bearing of one of the pivots of the declination-axis.

AA is a principal pole in the external angle of one of the framed prisms; it is one of those poles which in Figures 2 and 13 are seen to the extreme right and left, or of which in Figure 67 one is central and nearest to the eye; or one of those which, in Figure 28, occupy the cells *MM* which are farthest from the center.

B and *C* are two pieces of cast iron, shaped to embrace a pole which is nearly square. The pole is shaved to that form in the part where these irons embrace it. The only use of *B* is to give hold to the screws *DD*, which fix *C* in its place.

E is a piece projecting from *C*, in the same cast.

F is a plate of brass, screwed to *C* and *E* by four screws, *GG*. The bearing-piece which is represented in the figure is that which has an adjustment for making the declination-axis transverse to the polar-axis; for this, the holes in *F*, through which the screws *G* pass, are elongated in the direction parallel to the length of the pole. For the other bearing-piece the holes are round.

HH are antagonist screws which pass through a projection of *F*, for moving it up and down; the points of the screws rest on *E*. For the other bearing-piece these are wanting.

I is a projection from *F*, in the same cast with *F*, in which is the concave bearing for the pivot.

K is a cap which is screwed upon *I* by the screws *LL*.

The bearing of the pivot is in a concave cylinder, with some portions cut away. At that point of the concave cylinder which is nearest to the pole, a proper recess is made for receiving the mushroom-head of the pivot.

Figure 47, Plate XIV, represents the telescope as mounted in its declination-axis, and exhibiting a general view of several small parts which will hereafter be described in detail.

AA is the square telescope-tube.

BB the two halves of the declination-axis, screwed together so as to form an efficient declination-axis, securely holding the telescope. The extreme length of the declination-axis, from the end of one pivot to the end of the other, is 5 feet 8½ inches.

C is the object-glass-cell, to be described under Figures 56 and 57.

DDDD are small iron rods extending from the object-glass-cell to the eye-end, and confined at distances by small staples; these rods are to enable an observer at the eye-end to effect the adjustments of the object-glass, as will be seen in Figures 56 and 57.

E is the plate of brass, or breech-piece, closing the tube of the telescope, and bearing (as here represented) a micrometer eye-piece, with position-circle, and a chronometer. See Figure 55.

F is a brass bar, strengthened by an edge-bar, and turning on the pin *G*.

H is a declination-rod. Plans of the various declination-rods will be seen in Figures 49 to 54; details of their connexion with the bar *F* will be seen in Figure 48; and a general view of the position of one when in use will be seen in Figure 67.

I is the clamp, sliding on *H*, and taking hold of a pin fixed in the brass bar. See Figure 48.

K is the toothed-wheel-work, for moving the bar relatively to the telescope, or the telescope relatively to the bar.

L is the graduated arc at the end of the bar.

M is the microscope, carried by the telescope, for reading the graduations of the bar.

Figure 48, Plate XIV, represents on a larger scale that side of the telescope, near its eye-end, which bears the brass bar, &c.

AA is the wood-work of the telescope-tube, *B* the brass ring and breech-piece.

C is the brass bar passing under a bridge, *c*.

D its graduated limb. The available extent of this, as measured by the angular motion of the telescope, is 1° 22′.

E the micrometer-microscope, for subdividing the divisions of *D*.

F a rack-work, screwed to the telescope-tube.

G a milled head, acting on a train of wheels of which *H* is one, and of which the last pinion works in the rack-work *F*. This milled head and train of wheels are carried by the bar *C*. The wheel-work will be seen in greater detail in the small figure at the side.

I is a declination-rod, graduated to north-polar distance.

K is a slider upon it, which is secured by the clamp-screw *L*.

M is a piece connected with *K*, having at its end a fixed staple *N*, and a slider, *O*, of which the end has a deep notch (forming a *Y* to embrace the pin *Q*). In the ordinary state, this slider is forced to the pin *Q* by a strong spiral spring concealed within *M*; but for the convenience of putting the staple off and on the pin *Q*, a drawing screw *P* is provided, by which the slider *O* can be drawn back.

Q is the pin fixed in the brass bar. It has a mushroom-head, of which the external surface is conical, so that the staple *N* is easily passed over the conical head, and then lodges behind its shoulder; and when the spring is permitted to force up the slider *O*, the connexion of the staple *N* with the pin *Q* is perfectly firm.

To explain the use of this, it must be remarked that the lower end of the declination-rod is fixed to one of the poles of the polar-frame by a staple, sliding *Y*, and pin, exactly similar to these, and wanting only the slider upon the declination-rod with its clamp. The declination-rod in use assumes therefore the position seen in Figure 67. Its immediate effect then is to hold firm, not the telescope, but the pin *Q*. And the telescope may be moved relatively to this pin by turning the milled head *G*. This gives great facility for sweeping in declination to the extent of 1° 22'. And, as the relative movements of the brass bar and the telescope are measured by the graduations of *D*, there is given very great facility for measuring differences of declination to that amount. At the same time, the telescope is held in its position with extreme firmness.

Figures 49, 50, 51, 52, 53, Plate XV, represent the four declination-rods, (Figures 50 and 51 exhibiting different sides of the same rod), and Figure 54 represents two sliders with staples, &c., (such as are described in Figure 48, *K*, *L*, *M*, *N*, *O*), to be used under different circumstances. For understanding these, the reader is referred for a moment to Figure 67. It will there be seen that the declination-rod is attached to a pin on one of those principal poles, the bottom of which is nearest to the eye-end of the telescope, in Figure 67, and which may be called the northern pole. But there is also a similar pin on one of those poles whose bottom is farthest from the eye-end of the telescope, which may be called the southern pole. So long as the eye-end of the telescope is on the north side of the polar-frame, it is convenient to use as the point of attachment that pin which is on the northern pole; but when the eye-end of the telescope enters between the poles, it is necessary to use that pin which is on the southern pole; when it passes further still, the pin on the northern pole must be used; and when it passes far beyond the polar-frame for the obser-

vation of objects on the lower meridian, the pin on the southern pole is the more convenient. The rods are accommodated to these various circumstances.

Figure 49 represents the rod which is to be attached to the pin on the southern pole, and which may be used for objects between 10^0 below the celestial pole and 26^0 above it.

Figure 50 represents a rod to be attached to the pin on the northern pole, and which may be used for objects whose distance from the celestial pole is included between 26^0 above it and 58^0 above it.

Figure 52 represents a rod to be attached to the pin on the northern pole, and which may be used for objects whose distance from the celestial pole is included between 48^0 and 92^0.

Figure 53 represents a similar rod, to be similarly applied for north-polar distances included between 92^0 and 126^0.

In this manner we have provided for all polar distances included between -10^0 and $+126^0$. To provide for still greater distances below the celestial pole, Figure 49 is graduated on the opposite side, so that if applied to the pin on the northern pole, and in the opposite direction, it can be used for polar distances between $+12^0$ and -26^0; and Figure 50 is graduated on the opposite side, so that if applied to the pin on the southern pole, and in the opposite direction, it can be used for polar distances between -26^0 and -52^0. This last graduation is represented in Figure 51.

The letters *AP* and *BP* (above pole and below pole) have relation to similar letters upon the clamps connecting the great equatoreal circle with the polygon, (see Figures 28 and 30). While the *AP* graduations are used, the vernier near the *AP* clamp will give the true right-ascension of the object. While the *BP* graduation is used, the vernier near the *AP* clamp will give the true right-ascension, increased or diminished by 12^h.

For these different graduations, different sliding staple-pieces must be used, as shewn in Figure 54. This is necessary because, in Figure 48, the clamp-screw *L* must be on the side furthest from the telescope-tube, and the staple-piece *M* must be on the side nearest to the eye-end.

It is evident that, by graduating both sides of each rod, the instrument could be used in either position for objects in every part of the meridian. The rods of Figures 49 and 50 are however the only ones which are yet graduated on both sides.

The diameter of the declination-rods in their graduated part is about 1·1 inch; in the parts of Figures 52 and 53 which are not graduated, the diameter is about 2 inches. As there is no slide-motion of the smaller tube within the larger, they are very stiff. The end of each takes a shoulder-bearing in the staple-piece which hangs on the pin in the pole, and is secured there by a screw. The rods, clamps,

&c., were constructed under my superintendance, but the graduations were arranged by Professor Challis.

Figure 55, Plate XVI, represents the eye-end of the telescope complete (with a wire-micrometer mounted on it), as viewed from the side opposite to that in Figure 48.

A is the wooden tube, and *B* the brass breech-piece.

C is the position-circle, *D* its slow-motion-screw and clamp, and *EE* are microscopes for reading its divisions.

F is the head of a pinion for adjustment to focal length, and *G* is the tube which is slid inwards and outwards by the action of *F*.

H is an eye-piece inserted in *G*, and held by friction only. All the eye-pieces of every kind are thus inserted in *G*.

I is a declination-rod.

K is the graduated arc of the brass bar, and *L* the micrometer-microscope for reading it. (See *D* and *E* in Figure 48).

M is the lamp for illuminating the field of view.

N is a circular plate, turning on a screw in its center, and having a hole in snail-shape for limiting the aperture through which the light of *M* enters the side of the telescope.

O is a milled head for turning a pinion whose teeth work in the teeth of the wheel *N*.

PPPP are the square ends of rods (represented by *D*, *D*, in Figure 47), by which the screws affecting the adjustments of the object-glass are turned. Small keys are provided, which fit upon these square ends; but as they are not often used, they are not usually mounted.

Q is a half-seconds chronometer, fixed by screws in a cell; its winding-up-key will be seen projecting from one side. By the use of this chronometer there is no necessity for the reference to a clock, which (with a telescope of such a length) would be very inconvenient; and therefore no clock is provided in the room.

R is the finder. It is a telescope of $28\frac{1}{2}$ inches focal length, and $2\frac{3}{4}$ inches aperture.

Figures 56 and 57, Plate XV, represent the object-end of the telescope, with the apparatus for adjusting the object-glass. The same letters apply to these two figures.

To understand the object of these adjustments, it is necessary to consider what are the movements which may be required to make the performance of an object-glass the best possible. They appear to be the following: (1) It may be necessary to tilt the whole object-glass; (2) It may be necessary to turn one lens round, while the other remains fixed, in order to choose their best relative position; (3) It may be necessary to move one lens upon the face of the other, in order to center the lenses. The apparatus is adapted to these three purposes.

A is the wooden tube.

B the brass ring attached to it.

C is the object-glass-cell.

D, D, D, three cocks projecting from the object-glass-cell.

E, three corresponding cocks projecting from the brass rings.

F, screws, which work in *E* by ball-and-socket joint, and are tapped in *D.*

G, rods connected with *F* by universal joint, and led down the telescope-tube to the eye-end. They correspond to some of the rods *D,* in Figure 47, whose ends are represented by *P,* in Figure 55.

The object-glass-cell *C* is not fixed in the ring *B,* but is simply held by the three screws, *FFF*; and the observer at the eye-end of the telescope, by turning the proper rods *P,* (Figure 55), by means of a key, can, while he is observing a star, turn either of the screws *F,* and thus tilt the object-glass. The first of the adjustments above mentioned is therefore obtained.

H is the ring (concealed by the front plate of the cell) which holds the convex lens, or crown-glass-lens. It is cut in teeth on its external edge.

I is a toothed roller which works in it.

K is the axis of the roller *I.*

L is a rod connected with *K* by universal joint, and led down the telescope-tube to the eye-end; corresponding to one of the rods *D,* in Figure 47, whose ends are at *P,* in Figure 55.

The observer, therefore, by turning the proper rod at the eye-end, can turn the roller *I,* and can thus turn the crown-glass-lens, while the flint-lens is unmoved. The second adjustment is therefore obtained.

M is a frame carrying the axis of *I.*

N is the joint fixed to the cell *C,* on which *M* turns.

U, V, W, are a roller, frame, and joint, opposite to *I, M, N.*

i, m, n, u, v, w, are similar apparatus, in a diameter transverse to that in which are *I, M, N, U, V, W.* It is to be remarked, however, that the rollers *U, i,* and *u,* are smooth; the only roller which has teeth being *I.*

O is a bell-crank-lever, or rather lever-frame, which turns upon an axis, that is parallel to a tangent to the object-glass-cell, and is carried by that cell.

P is one of the pins forming the axis on which *O* turns. It is screwed into the cock *R.*

Q is a small projection from the lever *O,* pressing the roller-frame *M.* Thus by turning *O* upon its center *P,* the roller-frame *M* and the roller *I* are pressed towards the object-glass-cell, and force the crown-glass-cell *H* to slide upon the face of the flint-glass.

R is a cock projecting from the object-glass-cell.

S is a screw which works by a ball-and-socket in *R,* and is tapped into a ball which works in *O.*

T is a rod, connected with *S* by universal joint, and led down the telescope-

tube to the eye-end; corresponding to one of the rods *D*, in Figure 47, whose ends are at *P*, in Figure 55.

U, *V*, *W*, are the opposite roller, roller-frame, and joint; and *X* is a strong spiral spring which presses the end of *V*, and thereby urges the roller *U* against the crown-glass-cell *H*, so as to keep it in firm contact with the roller *I*.

In like manner, *o* is a bell-crank-lever, turning on an axis of which *p* is one end, pressing the roller-frame *m* with its projection *q*; *r* is a cock in which turns the spindle *s*, that is tapped into *o*; *t* is a rod by which *s* is turned, and which is led to the eye-end; *x* is a spiral spring pressing the opposite lever-frame *v*, so as to keep *H* in firm contact with *i*. The observer therefore at the eye-end, by turning the proper rod, can turn the screw *S*, and can thereby force the crown-glass-cell in the direction from *I* to *U*; or, if he turns the rod in the opposite way, can permit the spring *X* to push the crown-glass-cell in the direction from *U* to *I*. And by turning another rod, he can turn the screw *s*, and can thus force the crown-glass-cell in the direction from *i* to *u*, or can permit it to be pushed by the spring *x* in the direction from *u* to *i*. Thus the third adjustment is obtained.

I may mention here that the artist, by departing from my instructions, has made this part of the apparatus a little more complicated than is necessary; as, in the form which I designed, one lever would have been sufficient instead of the two, *M* and *O*.

This power of adjustment by the observer is so convenient, that I would recommend that any large object-glass be fitted with it.

The clear aperture of the object-glass is a little more than $11\frac{1}{2}$ inches. Its focal length, from the front of the convex lens to the place of the image, is 19 feet $5\frac{3}{4}$ inches. By means of the apparatus just described, Professor Challis has adjusted the object-glass to very admirable performance. I have seen the triple star ζ Cancri with great beauty, and am confident that the object-glass is competent to any observations of the closest double stars. I have also seen the large planets with great beauty.

The telescope is fitted with several eye-pieces of different kinds, which require no description. As one eye-piece, however, was arranged by me specially for this telescope; (though I have since used similar eye-pieces on a telescope at the Royal Observatory of Greenwich), I may perhaps with propriety describe it here.

Figure 58, Plate XVI, represents the longitudinal section of a double-image eye-piece, of four lenses. The focal lengths of the lenses, reckoning from the object-end to the eye-end, are in the proportion of 4, 4, 8, and 4; and the intervals between the lenses are 4, 14, and 9. These numbers make an achromatic eye-piece, according to the theory laid down by me in the *Cambridge Transactions*, Vol. III. Great care is taken to adjust the distance between the first and second lenses, so

that the image of the object-glass falls exactly on the second lens. The second lens is divided, and one half is made to slide by the side of the other, by means of a micrometer-screw. The work of this part is represented in Figure 59. By the sliding of this half, the image formed by one half of the rays from the object-glass is made to move while the other image remains stationary. The use of this eye-piece, for measures, is exactly similar to that of the heliometer, or any other double-image telescope.

It is necessary, for the proper performance of this eye-piece, that the pencil of light be pretty accurately divided into equal parts by the line dividing the second lens. For then only can the images be equally bright. In order to insure this condition, the eye-piece ought to be carried by a plate transverse to its tube, which turns by motion on a line of hinges parallel to the line of division of the second lens, and can be adjusted with reference to that hinge-motion by a screw. This adjustment was not provided for the eye-pieces of the Northumberland Telescope, but I have lately adopted it with advantage at the Royal Observatory.

I may also state here an improvement (not yet decisively tried by me) which I have made in the principle of this eye-piece. The numbers above given constitute an eye-piece achromatic in the ordinary sense of the word; that is, the image receives no colour from being brought to any other part of the field than the center. But this applies to the fixed image only, and not to the moveable one, which when far separated is sensibly coloured. I have lately found, however, from theory, that it is possible to construct an eye-piece which shall be achromatic for both images; and the numbers which I am about to try are the following:

For the focal lengths; the focal length of the first (or that nearest to the object-glass) may be any whatever; those of the others are to be 5, 1, 1; these numbers being multiplied by any arbitrary unit. The divided lens is that whose focal length is 5.

For the distances between the lenses: the first distance (reckoning from that nearest to the object-glass) is to be equal to the focal length of the first lens; the others are to be 2 and 1·75; these numbers being multiplied by the same arbitrary unit as that for the focal lengths.

The power of the eye-piece would be changed by changing the first lens.

I have not yet published the details of this theory.

Figure 60, Plate XVII, contains a ground-plan of the observing-chair-frame. Figure 61 contains an elevation of its back; and Figure 62 is a longitudinal section. The scale is $\frac{1}{32}$. The great length of the telescope renders it necessary to provide special means for easily placing the observer in all positions in the surface of a sphere whose center is the center of the telescope; and this is done by making a frame, of which the upper edge is nearly a circular arc whose center is the center of the telescope, and causing this frame to traverse horizontally round a pin in the floor, exactly below the telescope center; then the observer's chair slides on the chair-frame. The same letters have the same application in Figures 60, 61, and 62.

A is the pin in the floor, under the center of the telescope. It is the same as *N*, in Figure 2.

BBBB are various beams of the chair-frame, parallel to the floor.

CC are two blocks at the smaller end of the frame, for giving the proper elevation at that part.

DD are the bars giving the first degree of slope upwards from the horizontal part.

EE are the bars giving the second degree of slope upwards.

FF are the bars giving the third degree of slope upwards.

GG are the back-pieces, which are not quite perpendicular to the floor.

H is a braced frame for supporting the middle of *EE*.

I is a braced frame, and *KK* are external braces, for maintaining the uprights *GG* in their proper position.

L is a ladder, attached to one side of the frame, to enable the observer to ascend to his chair.

MM are two small wheels which support the smaller end of the frame.

NN are two wheels, 18 inches in diameter, which support the larger end of the frame. One of these wheels has teeth in its inside.

O is a winch and sliding-rod by which the observer turns the wheel-work that acts on the interior teeth of the large wheel, and thus causes the chair frame to move on the floor.

P is a bar connecting the two uprights *GG*, and supporting the pulley *Q*. *P* is bent, to leave room for the iron *M* and the rope *N* of the chair (Figure 64) to pass.

R is a rope passing over the pulley *Q*, and supporting the chair.

S is a winch, with pinion-work and ratchet, for raising the chair through large elevations.

TTT, in Figure 62, is the groove within the side of the frame, in which the pins *BBBB* of the principal chair, Figure 64, and the pins *BBBB* of the lower chair, Figure 65, are compelled to slide.

Figure 63, Plate XVII, is a view of the machinery by which the observer, when seated in his chair, moves the chair-frame.

BB and *K* are horizontal beams and brace, as in Figures 60 and 61.

N is one of the large wheels, as in Figures 60 and 61.

O is the winch, as in Figures 60, 61, and 64.

T is an eye-bolt, as in Figure 64, turning in the chair, and allowing the long shaft from the winch *O* to pass through its eye. The shaft has a slider within it, compelled by means of a stud in a groove to turn with it; and thus the winch *O* is always in a convenient place for the observer, the shaft always adapting itself to the proper length.

U is a hook's joint at the end of the slider.

V is a bevelled pinion which it turns.

W is a bevelled wheel in which *V* works.

X is a pinion on the same axis with *W*.

Y is the row of teeth within *N*, in which *X* works.

Z is a latch, by lifting which the wheel *W* and pinion *X* can be withdrawn from action with the other wheels, and the chair-frame can then be pushed along the floor by hand.

Figure 64, Plate XVIII, is a view of the upper chair.

A, *A*, are its two principal bars.

B, *B*, *B*, *B*, are the four pins which slide in the groove *TTT*, in Figure 62.

C is the seat, and *D* the foot-stool.

E is the back of the chair, turning with hinges on the seat.

F is the rope which supports the chair; the same which passes over the pulley *Q*, in Figures 60 and 61.

G is a small windlass round which the end of *F* is wound, and to which it is fastened.

H is a ratchet-wheel fixed to *G*; *I* is a click.

K is a small lever, whose end slides with a fork under a mushroom-head of the axis of *H*; it carries a pin which lodges in the teeth of *H*.

By means of this lever and ratchet-wheel, the observer, when seated in the chair, can with great ease raise or lower the chair with himself on it, and can thus, while using the telescope, adjust himself exactly to the proper height.

L is a bend of the upper bar connecting *AA*, in the form of a common crank. This bar turns in the wooden bars *AA*.

M is a bent bar which turns upon the crank *L*. One end is fastened to the top of the chair-back, and the other is acted on by the cord *N*.

N is a cord fastened to this bent bar, and wrapped round the small windlass *P*.

Q is a ratchet-wheel connected with *P*. It has a click, &c., similar to that for *H*.

The observer when seated in his chair can, by turning the wheel *Q*, pull or relax the rope *N*, and can thus bring the chair-back *E* backwards or forwards. He can thus with ease place himself in a position in which his eye is at the proper distance from the telescope, while his head is properly supported by the back of the chair.

The mechanism of the bars *L* and *M*, though generally efficient, is not satisfactory to me. The arrangement which I wished to obtain was one which should give the required motion to the chair-back without any projection in front of the chair-back, or behind the bars *AA*. I could not, however, contrive anything quite satisfactory.

Figure 65, Plate XVIII, represents the lower chair, adapted for use on both sides of the zenith, for small zenith distances.

AA are the principal beams.

BBBB the pins sliding in the groove *TTT*, Figure 62.

CC are the two backs, turning on hinges, of which one is raised when the observer's head is to the north, and the other when his head is to the south.

DDDD are large wedges.

EE are dove-tails on which they slide.

FF are iron hooks of a square form, fastened to the backs *CC*, and underneath which the wedges *DD* slide. By drawing the wedges back to the ends of *A*, the backs *CC* will sink into the plane of *AA*; by thrusting the wedges forward, the backs may be raised considerably.

Figure 66, Plate XVIII, represents the chair used for observations very near to the celestial pole.

A is a board about 7 feet long, nearly filling up the space between the two prism-sides of the polar-frame.

B is an iron rod with a square hook at the end, for hooking under that side of the polygon, between the prism-sides, which is the higher, or the nearer to the south side.

C is a rod, jointed to *A* and *B*, which acts as a bridle to *B*.

D is a staple, with a pin, which can be fixed in one of several holes in *B*, and will thus place the upper end of the board *A* at different heights above the polygon.

E is a sliding bar at the other end of *A*, bridled by the rod *F*, and adjustible in the staple *G*. The bearing of the board upon the lower edge of the polygon is by the bar *F*; and thus the adjustment of *E* to different heights in *G* will place the lower end of the board *A* at different heights above the polygon.

H and *I* are seats or rests, which by means of pins lodging in holes can be fixed in different parts of *A*.

Some parts of this chair were arranged by Professor Challis.

Figure 67, Plate XIX, is a north-and-south section of the building and instrument, intended to give a general view of the principal parts of the mechanism of every kind in combination, the machinery of the shutters excepted. It exhibits the interior appearance of the octagonal walls, the interior appearance of the dome, the south steps, the clock-work box beneath them, the polar-frame with its supports at the upper and lower end (the adjustment at the lower end and the large equatoreal circle being lightly traced), the general structure of the polar-frame, the bearing-piece for the declination-axis, the telescope as mounted with its finder, the declination-rod and its attachment, the chair-frame and chairs; the observer in the upper chair holding in his hand the long handle to the hook's joint by which a slow motion in hour-angle is given to the polar-frame relatively to the equatoreal circle, and having at his command the long handles which communicate

motion to the great wheel of the chair-frame, and to the machinery for turning the dome. The machinery for turning the dome is also shewn, and two of the hold-fasts of the dome.

It will here be seen that all the movements which are necessary during the continuation of a series of observations, are completely under the control of the observer, without implying any necessity for his departing from his position in the observing-chair.

G. B. AIRY.

October 6, 1843.

Although very great labour was employed in the examination of the drawings and engravings, the following errors have been discovered since the impressions of the plates were taken.

Plate VI, Figure 17. *For* Hodfast *read* Holdfast.

Plate VII, Figure 21. There is an error in the neighbourhood of the letter *H*. The bar *I* ought to pass through the eye of the short bar projecting from the beam, and *not* the bar *H*, as is represented in the figure.

Plate IX, Figure 29. In two of the cells *NN*, short lines should be drawn to shew the internal re-entering angles of the cells.

Plate XII, Figure 36. In the left-hand pier, the bar *IRO* ought to be represented as passing *within* the triangle *P*, in the same manner as in the right-hand pier.

Northumberland Equatoreal and Dome.

Fig. 1.

Small plan of Observatory and Dome.

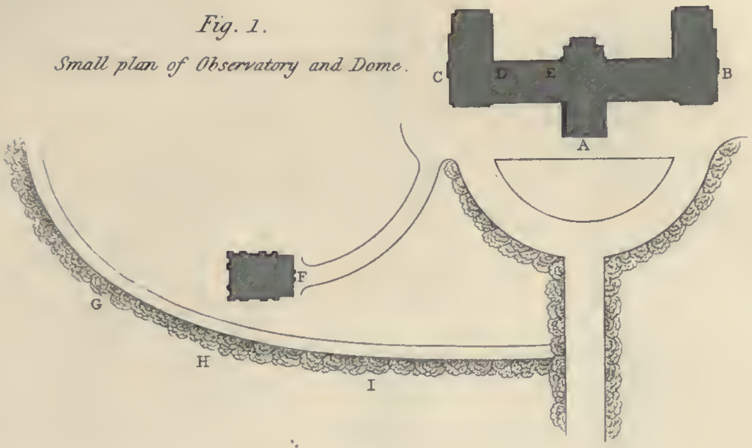


Fig. 3. — Plan of walls and wall-curb.

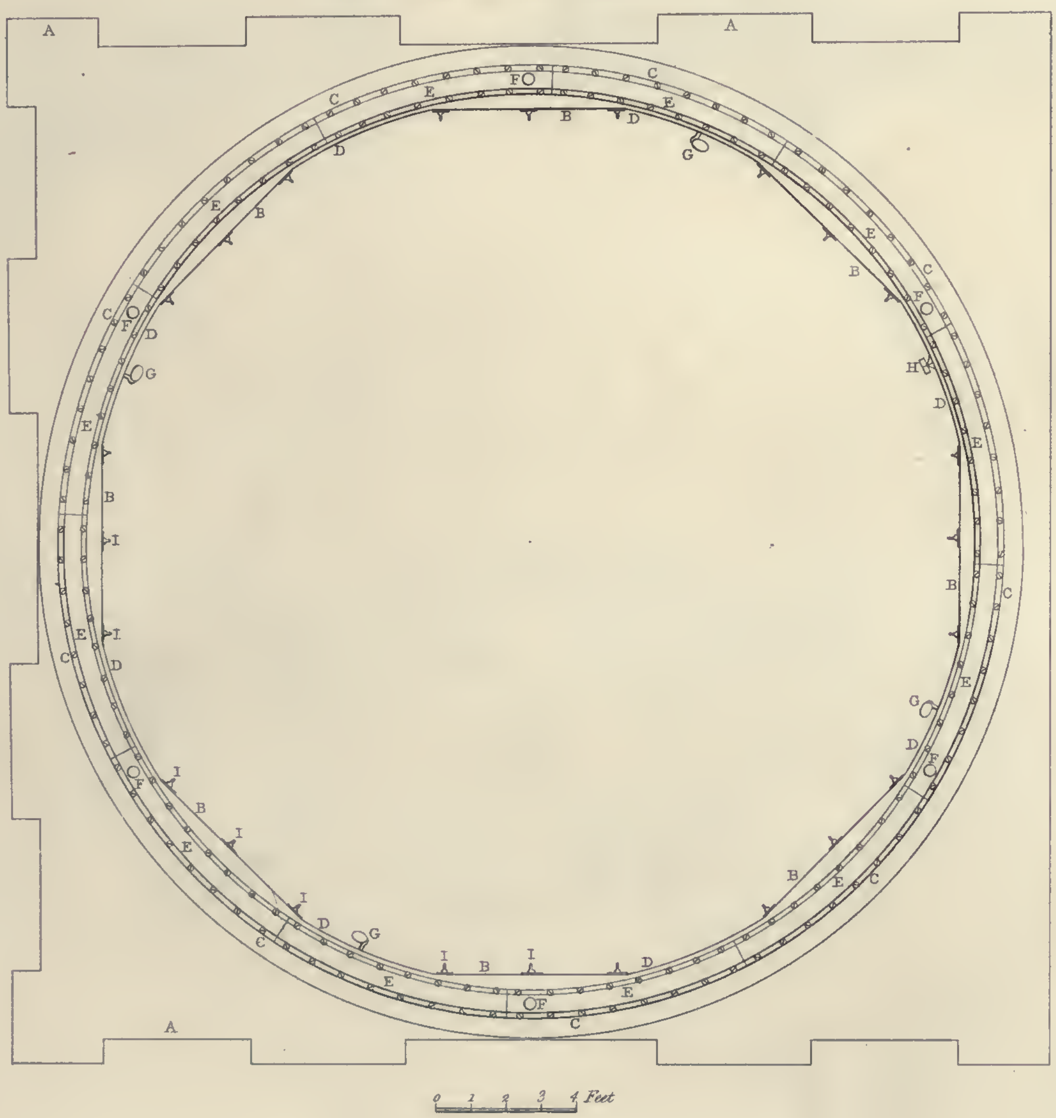
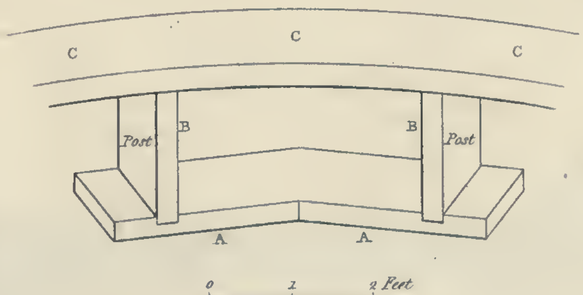


Fig. 4. — Method of fixing the dome curb to the wall.



J. Basire sc.

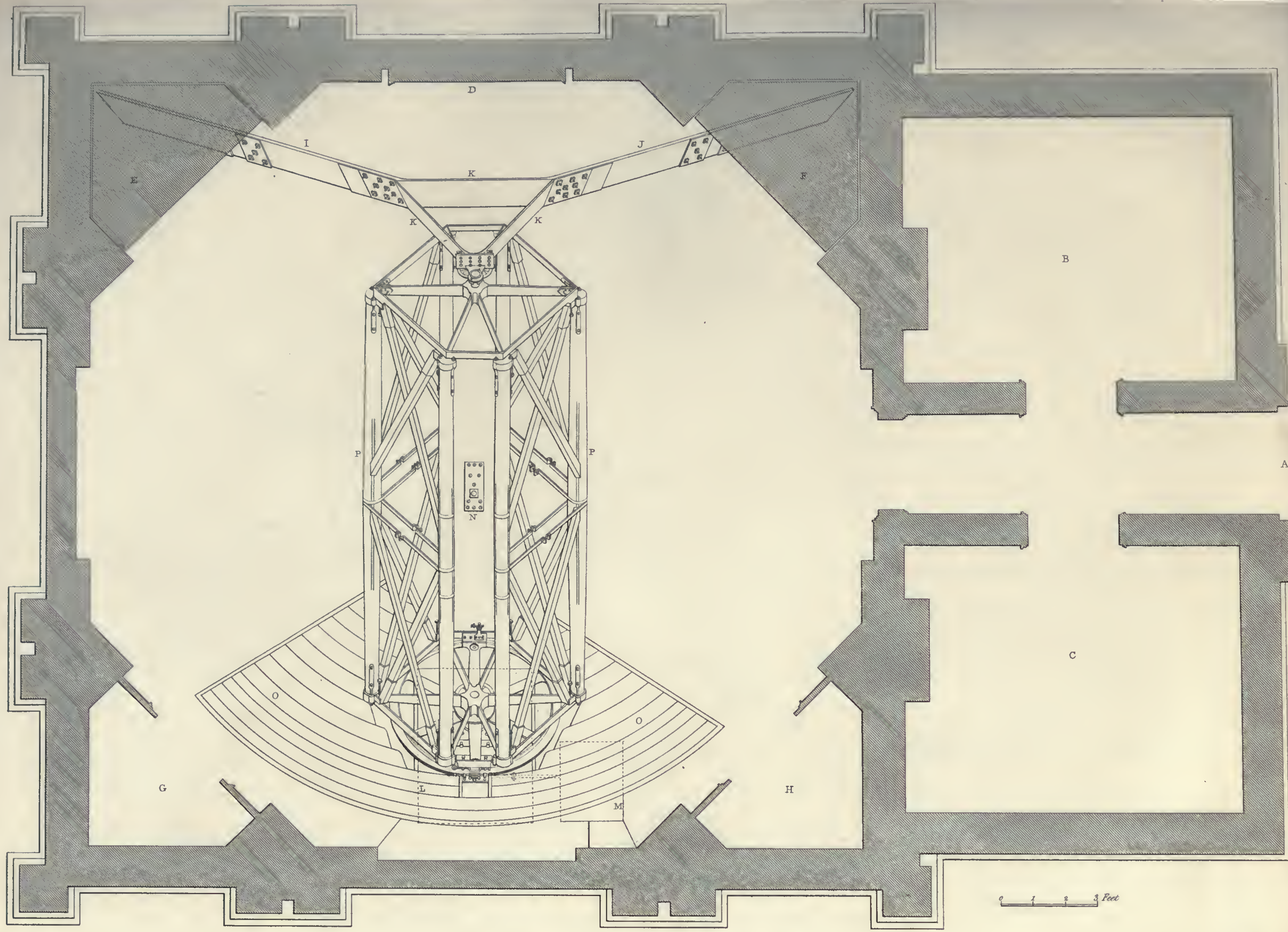


Fig. 2. — Ground plan of walls, piers, and polar-frame.

J. Basire sc.

Fig. 5.
Lower curb of Dome.

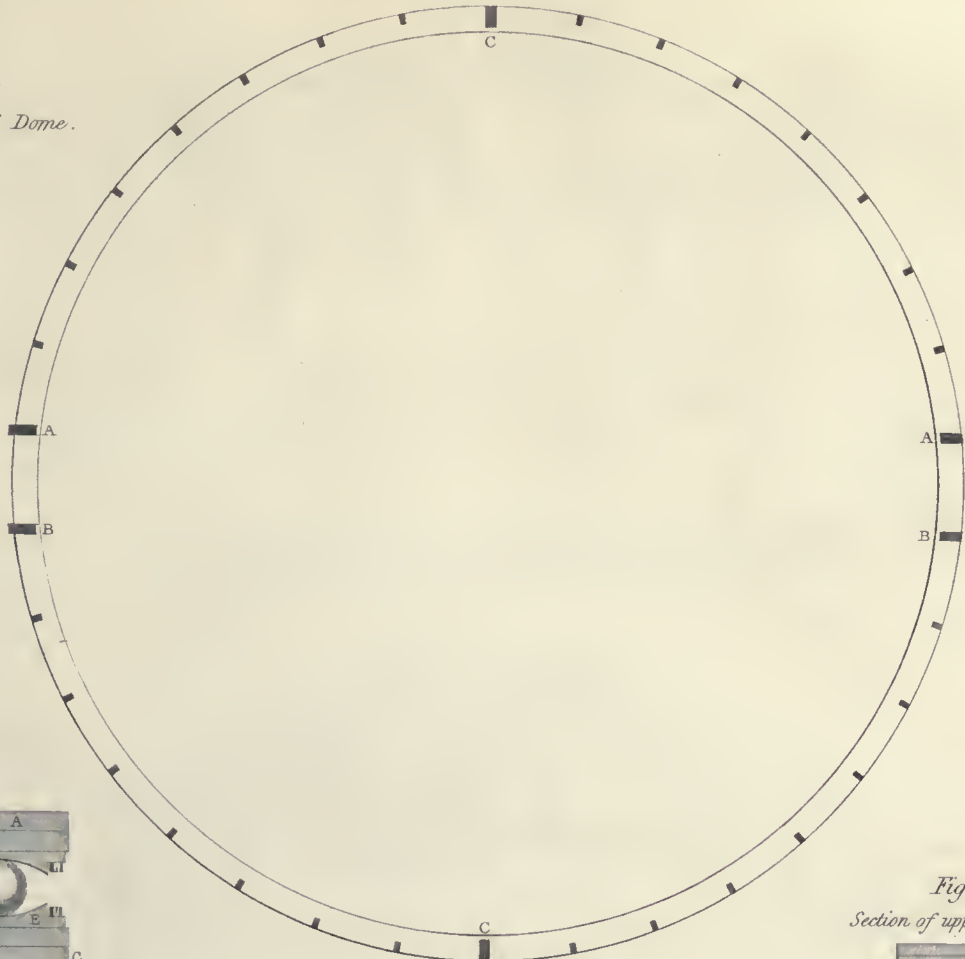


Fig. 6.
Section of wall curb and lower curb of Dome.

Fig. 9.
Section of upper curb of Dome.

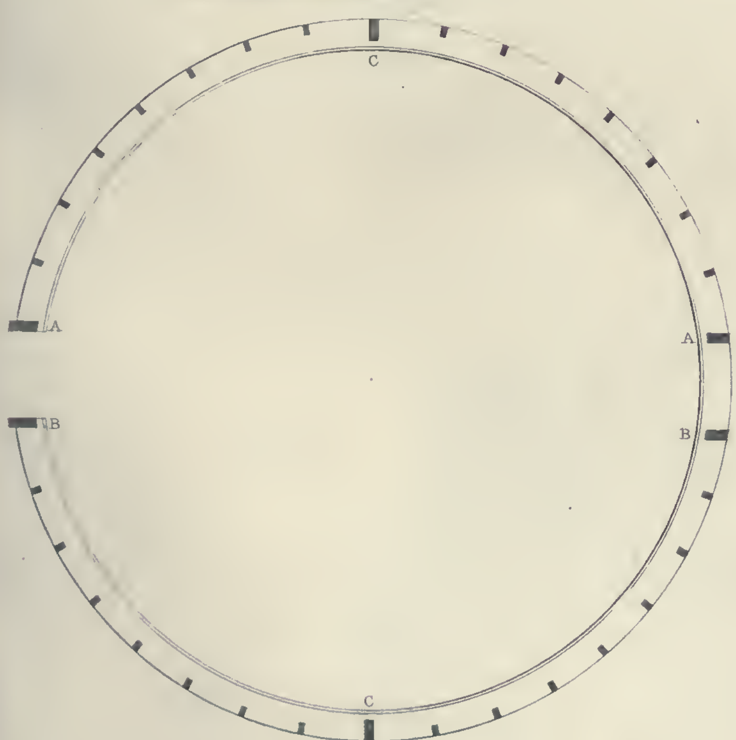


Fig. 7.—Upper curb of Dome, lower side.

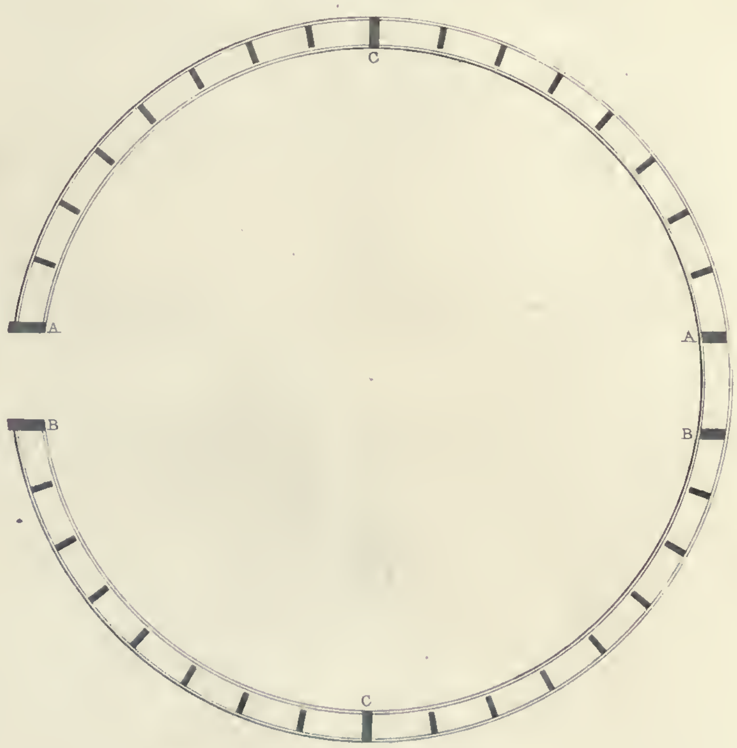


Fig. 8.—Upper curb of Dome, upper side.

J. Basire sc.

Northumberland Equatoreal and Dome.

Fig. 10.—Principals of the Dome.

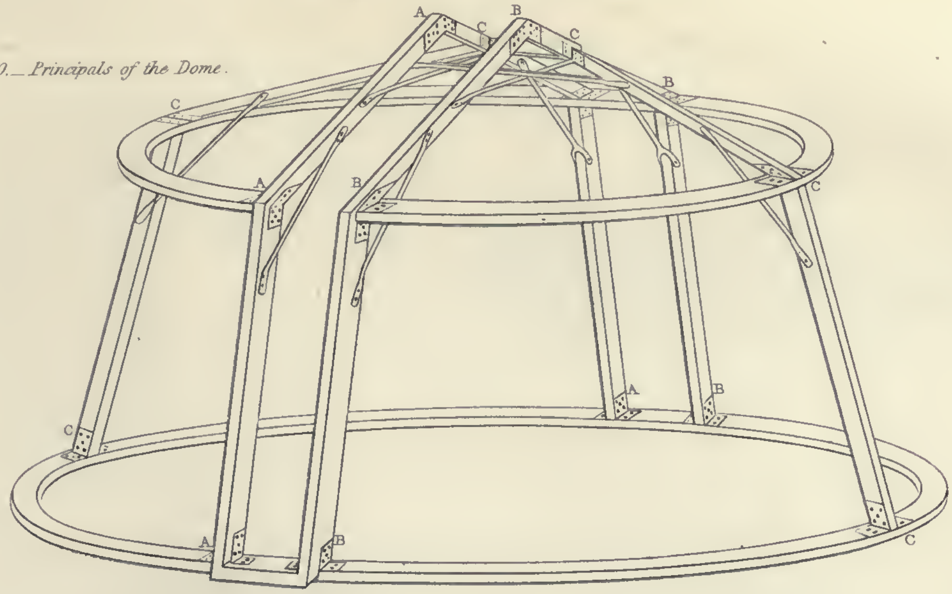


Fig. 11.—Frame of the Dome.

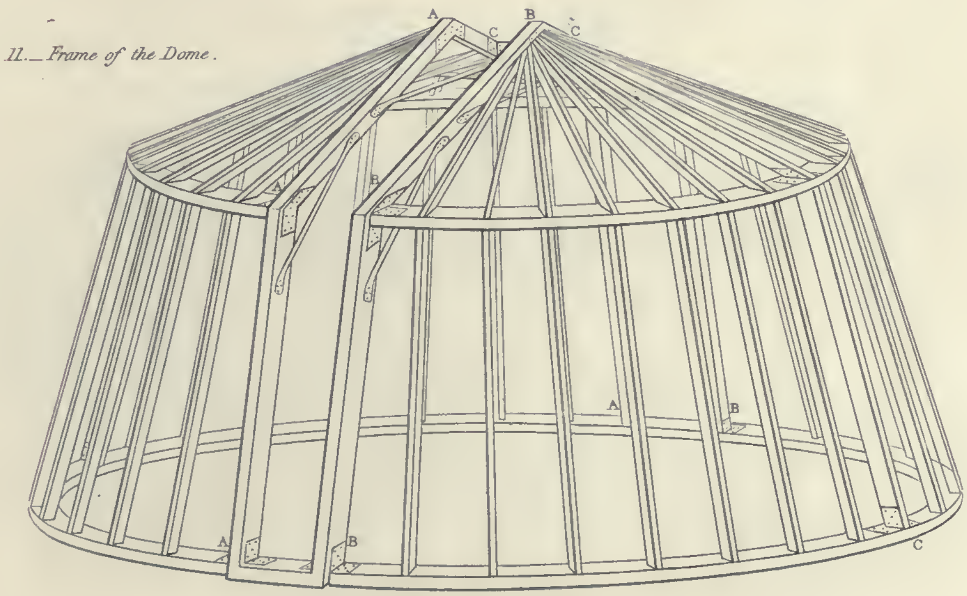
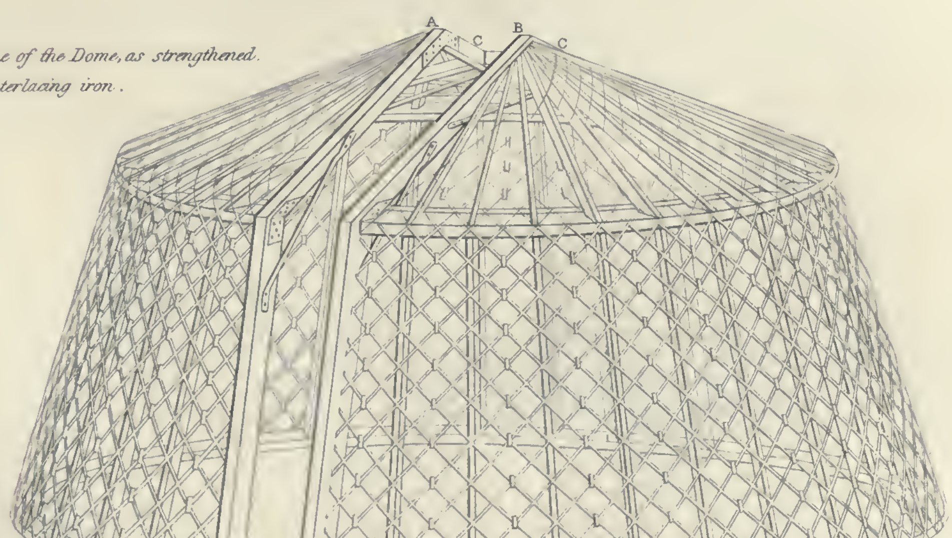


Fig. 12.—Frame of the Dome, as strengthened by interlacing iron.



0 1 2 3 4 5 Feet

J. Basire sc.

Northumberland Equatoreal and Dome

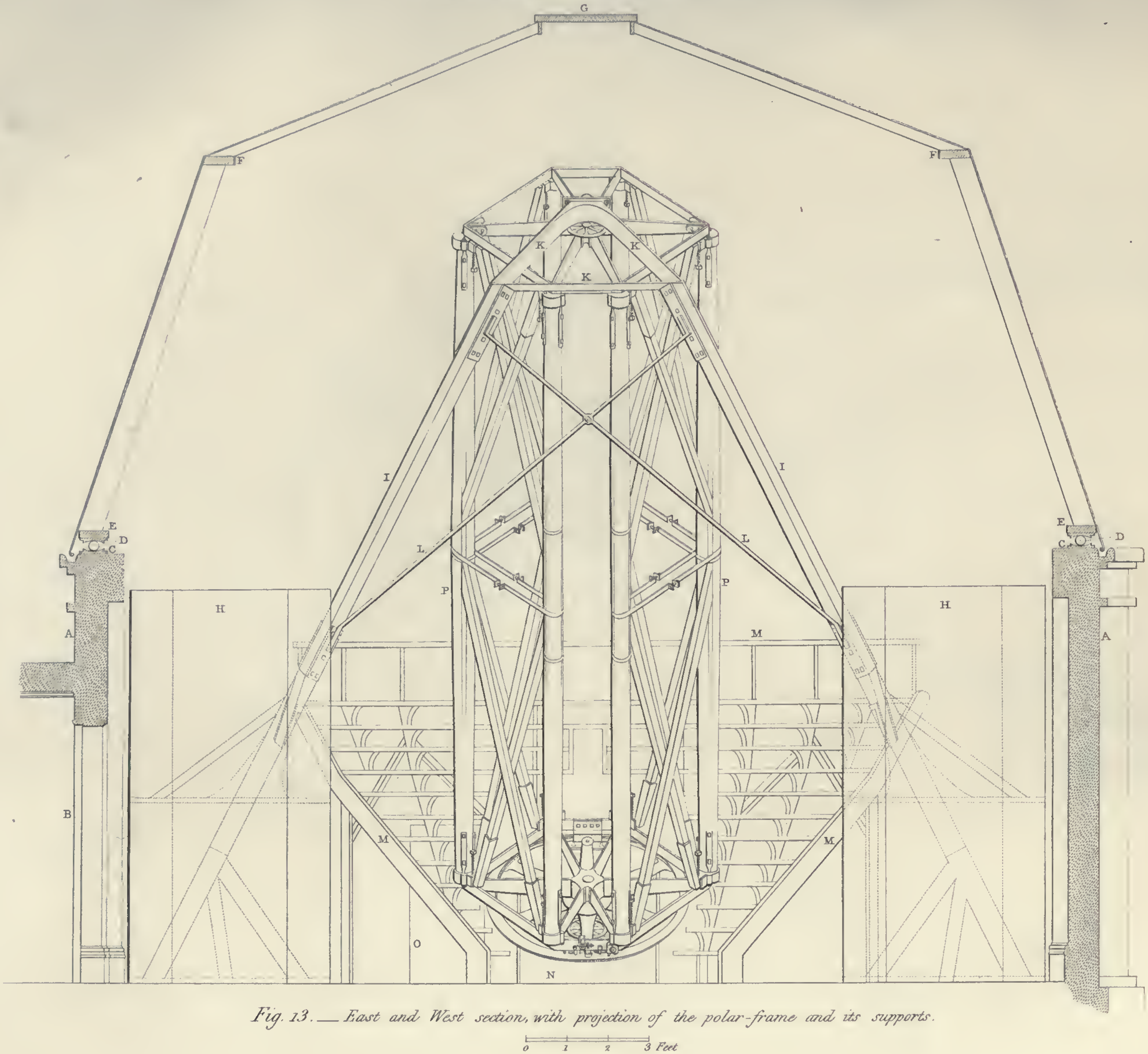


Fig. 13. — *East and West section, with projection of the polar-frame and its supports.*

J. Basire sc.

Northumberland Equatoreal and Dome.

Fig. 14.

Lever for moving the dome.

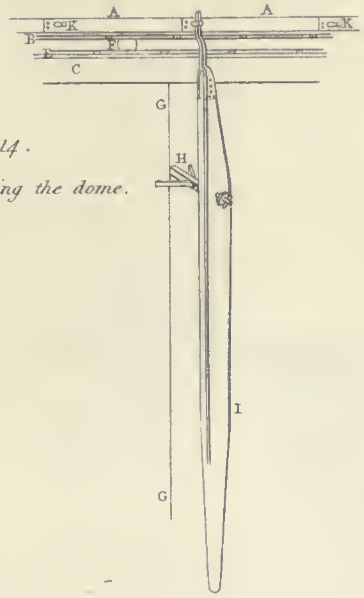


Fig. 15.

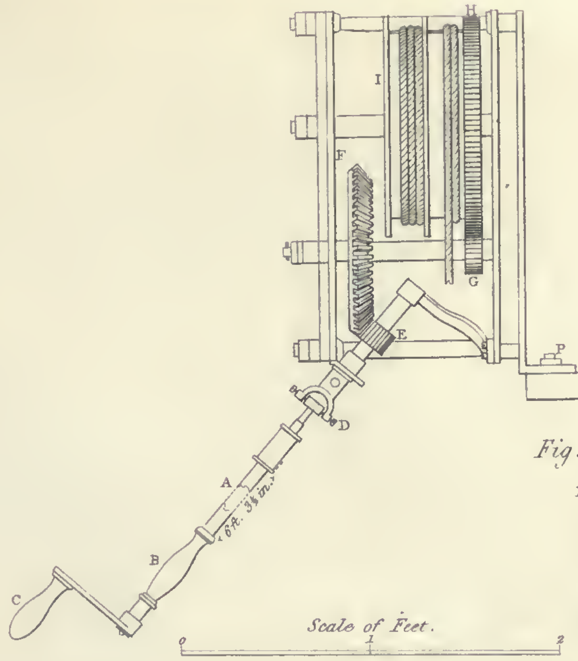


Fig. 16.

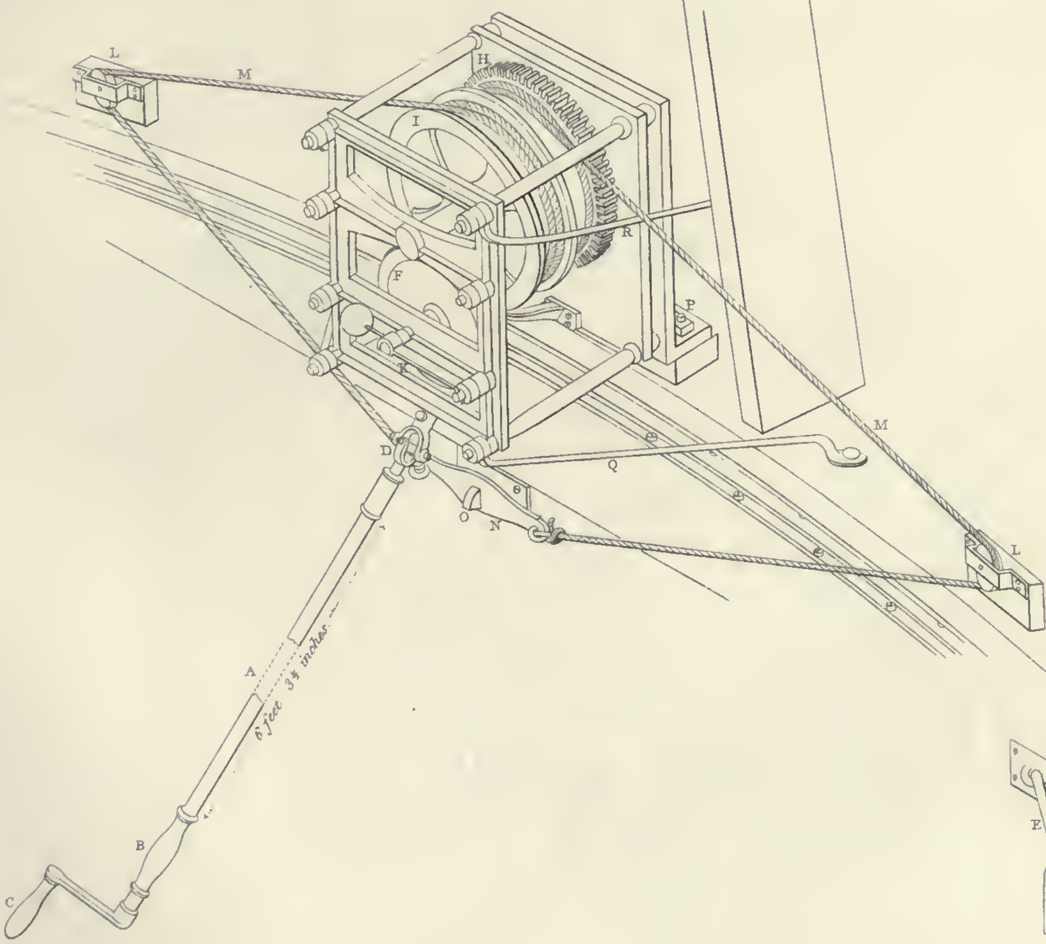


Fig. 17.

Hodfast for securing the dome.

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Fig. 18. Section of shutter when closed.

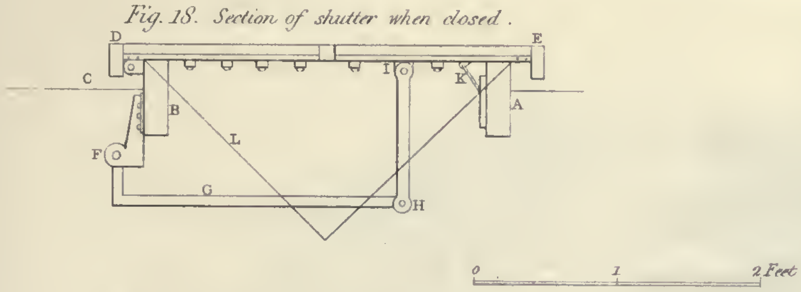


Fig. 19. Section of shutter when open.

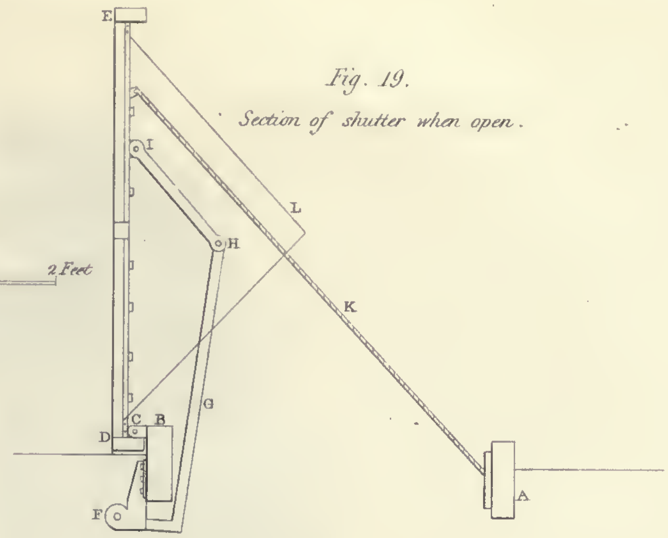


Fig. 21. General arrangements of shutters.

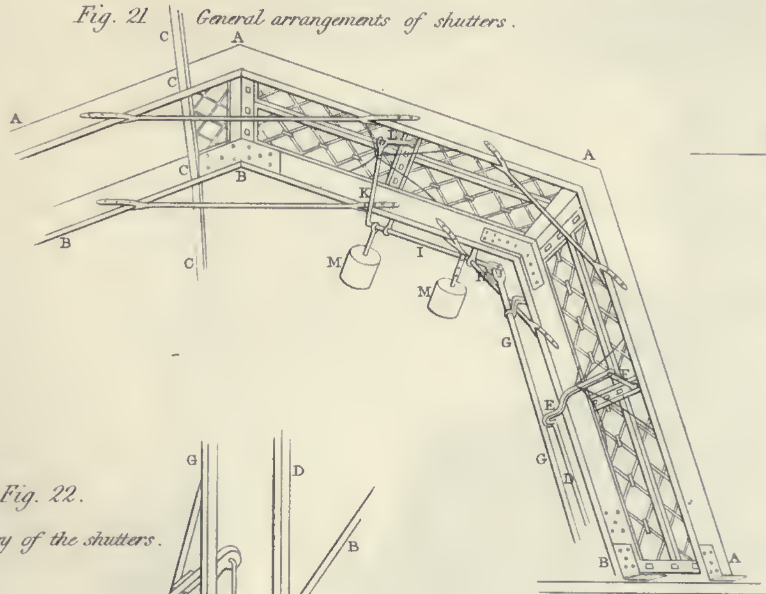


Fig. 20. Upper shutter.

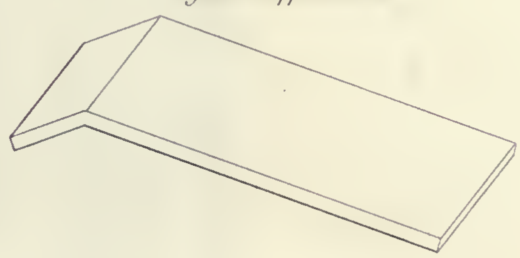


Fig. 22.

Machinery of the shutters.

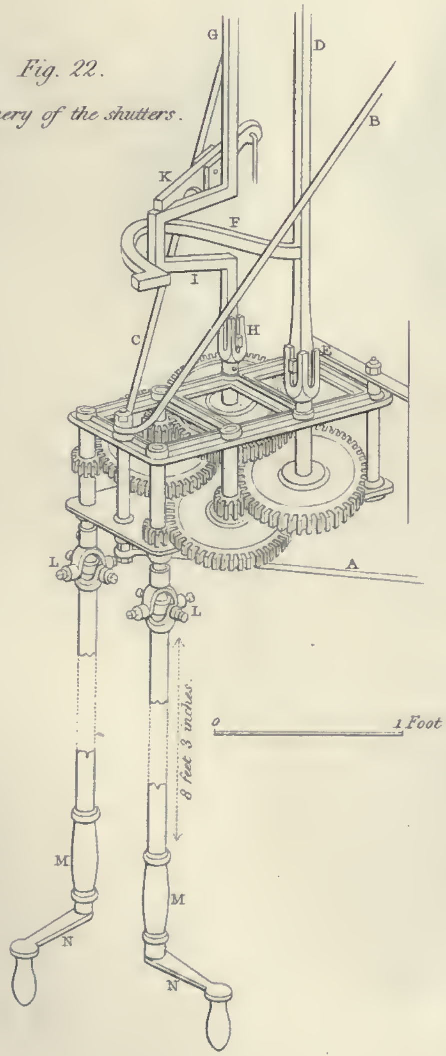
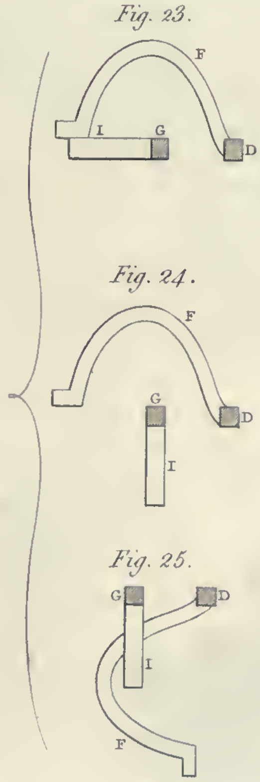


Fig. 23.

Fig. 24.

Fig. 25.



Machinery of the shutters.

Fig. 27.—Adjustments of lower pivot.

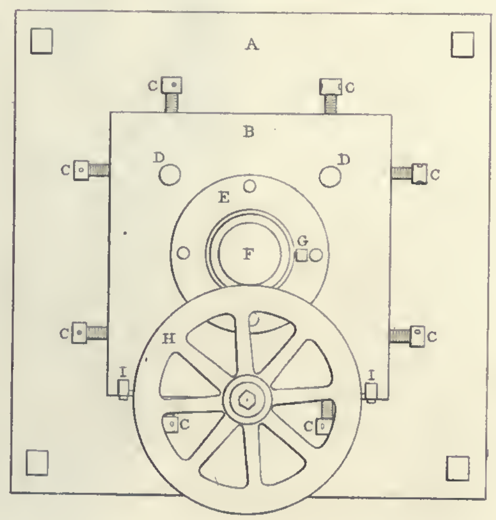


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Plate VIII.

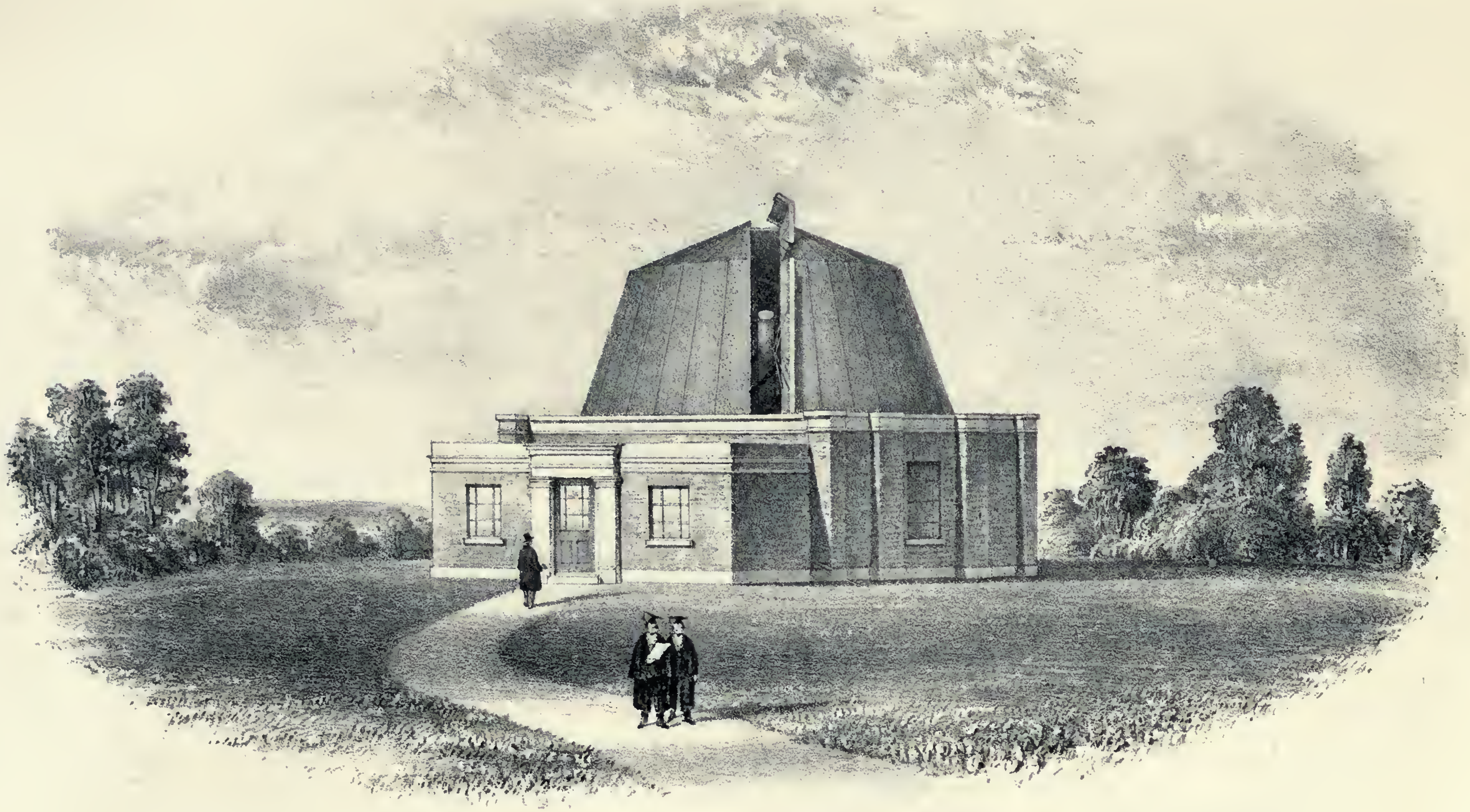

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Fig. 26 _ Exterior view of the Dome.

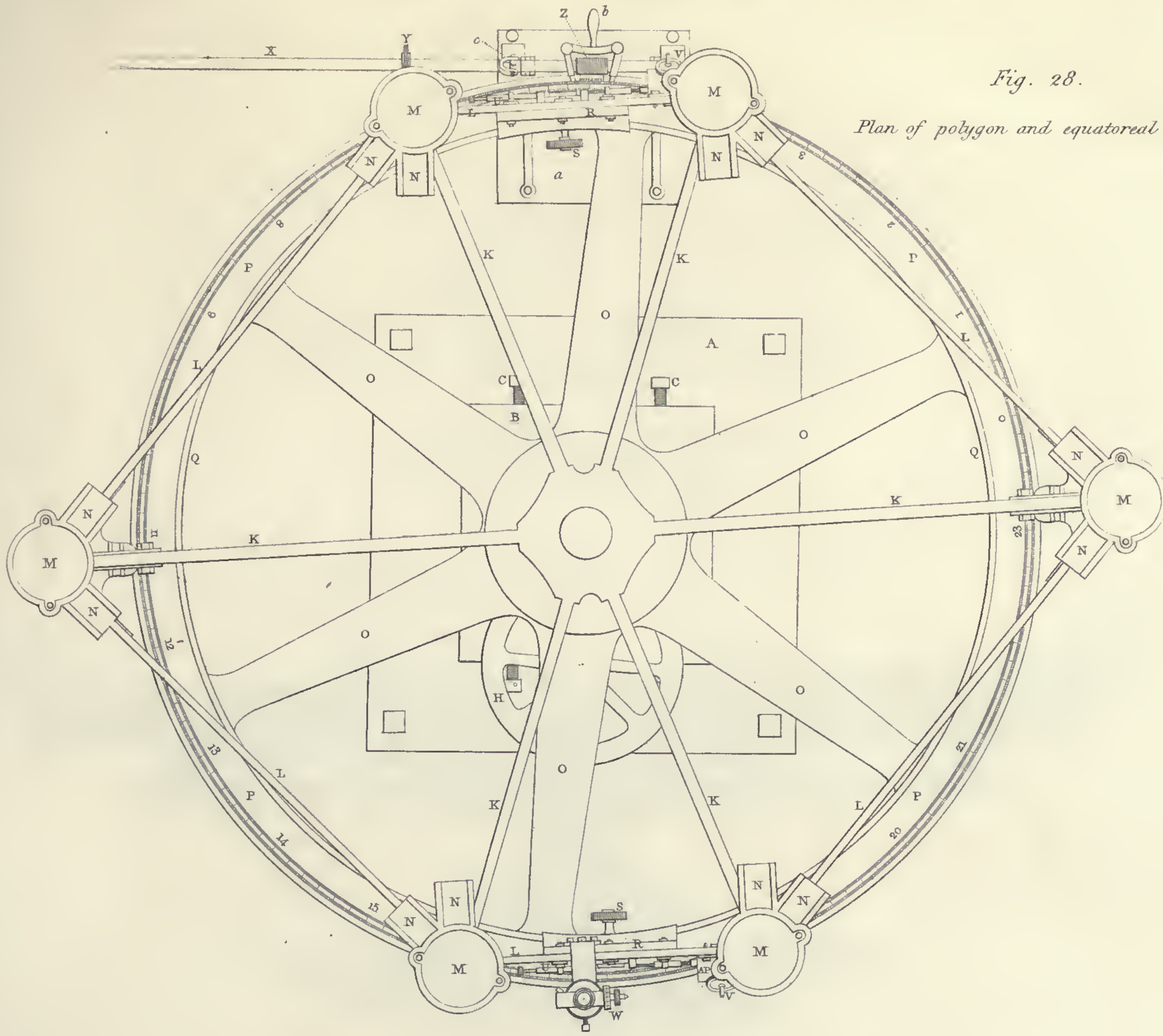

Fig. 28.

Plan of polygon and equatoreal circle.

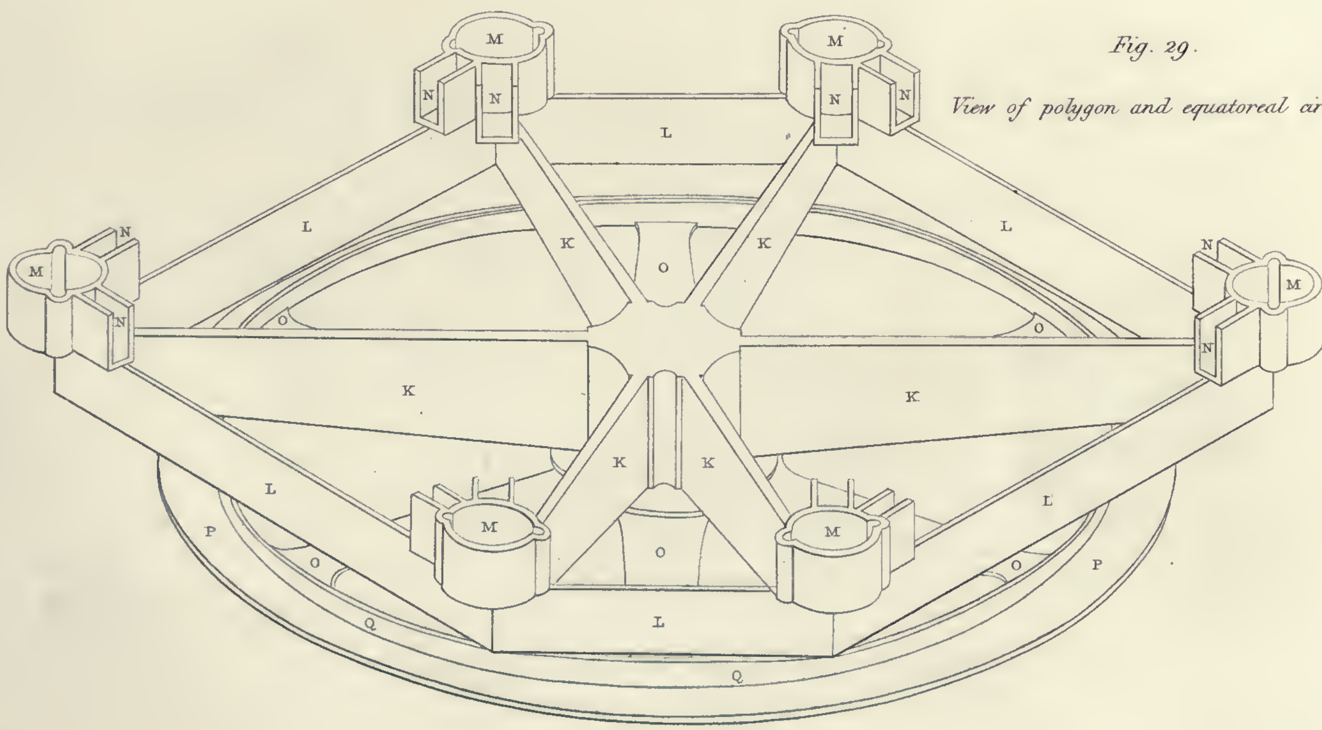

Fig. 29.

View of polygon and equatoreal circle.

0 1 Foot.

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Fig. 30. — Clamp of polygon and equatoreal circle.

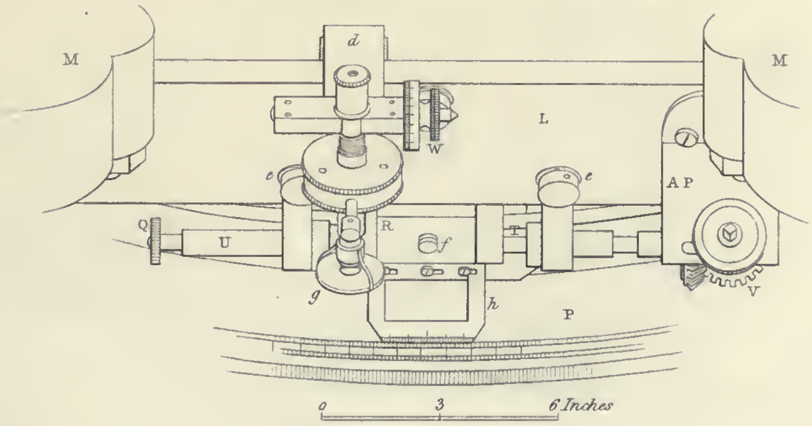


Fig. 31. — Section of polygon and equatoreal circle.

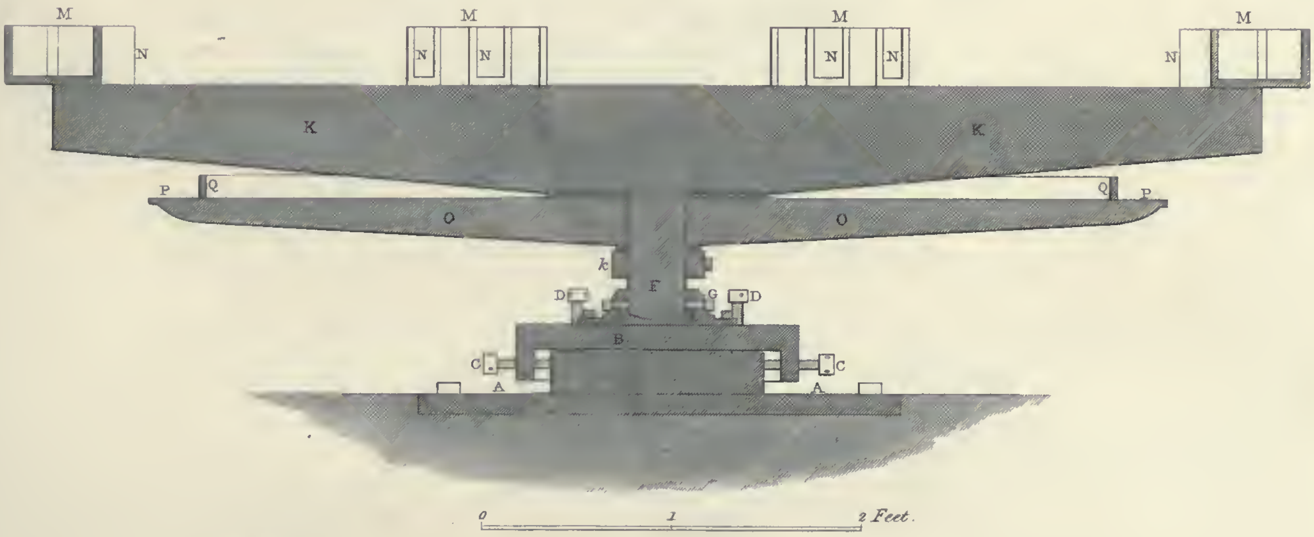


Fig. 35.

Apparatus for assisting the movement of the polar frame.

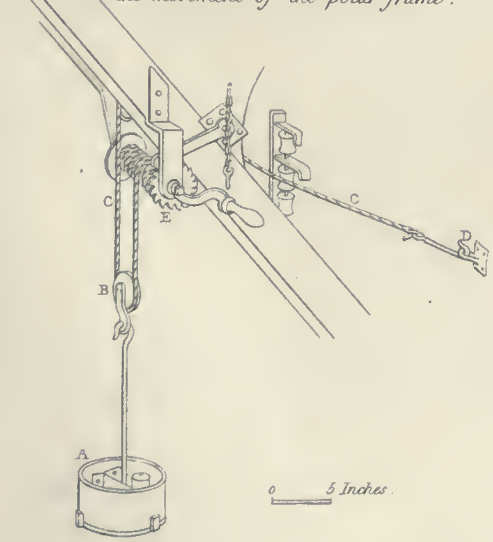
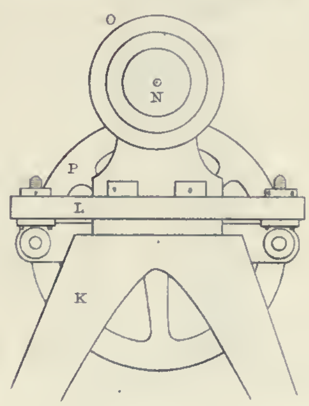
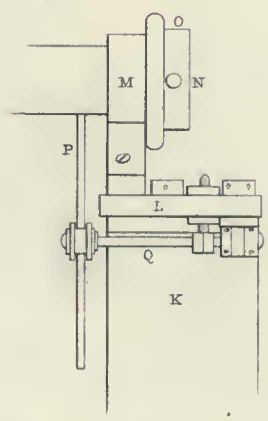


Fig. 37.

Fig. 38.

Support of upper pivot.





0 — 1 Foot

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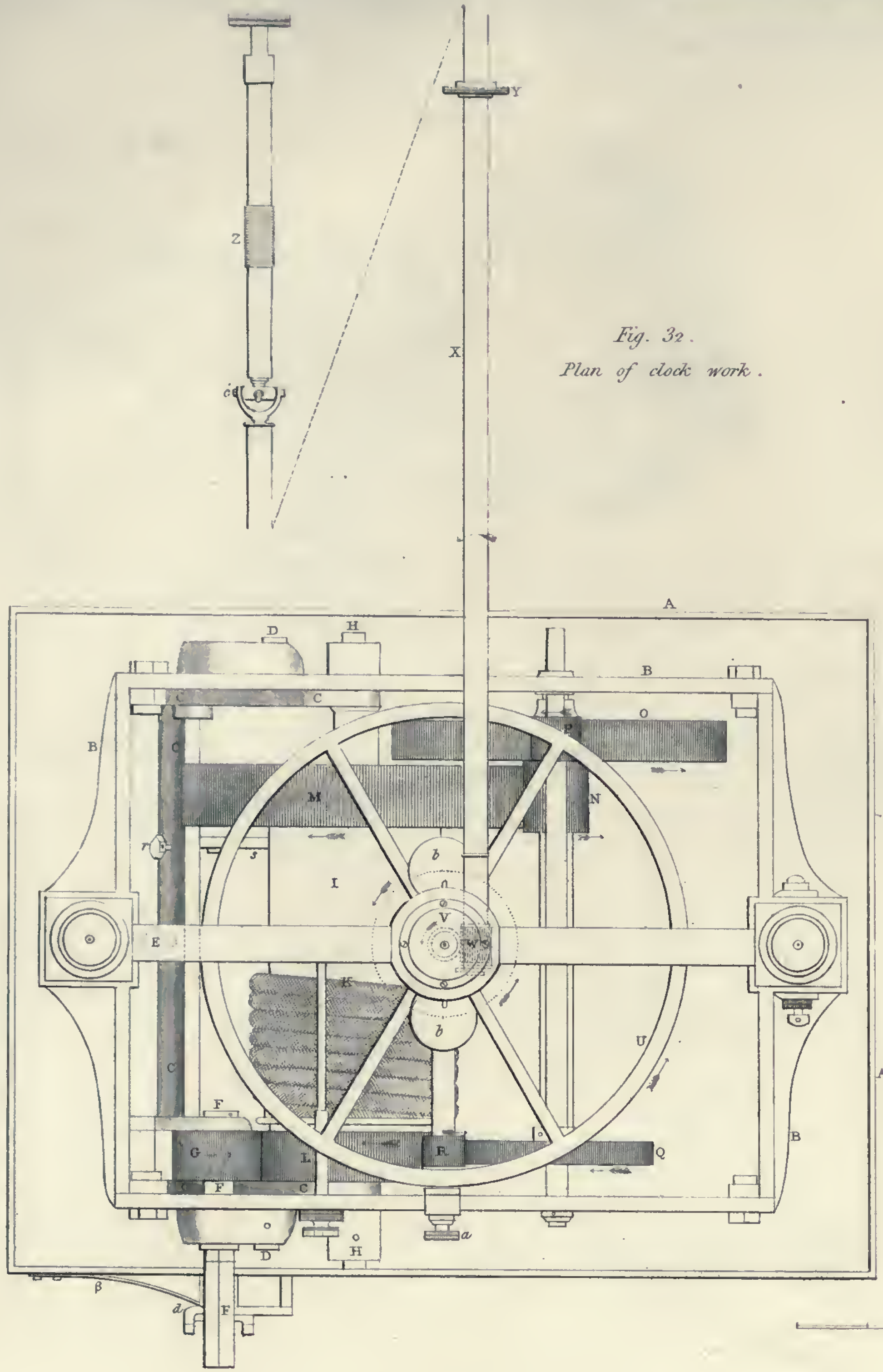

Fig. 32.
Plan of clock work.

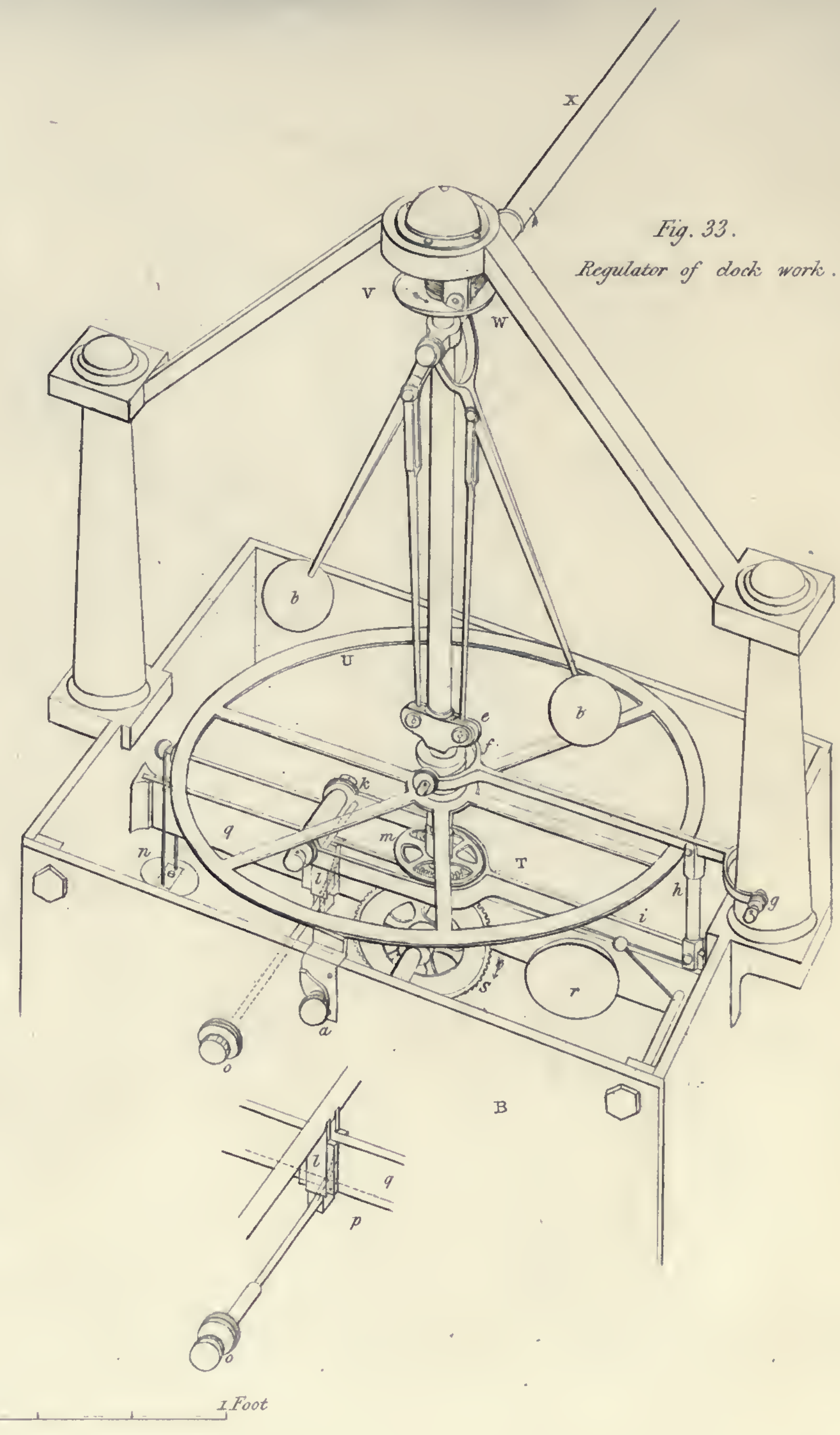

Fig. 33.
Regulator of clock work.

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Fig. 34.

Going-fusee of clock-work.

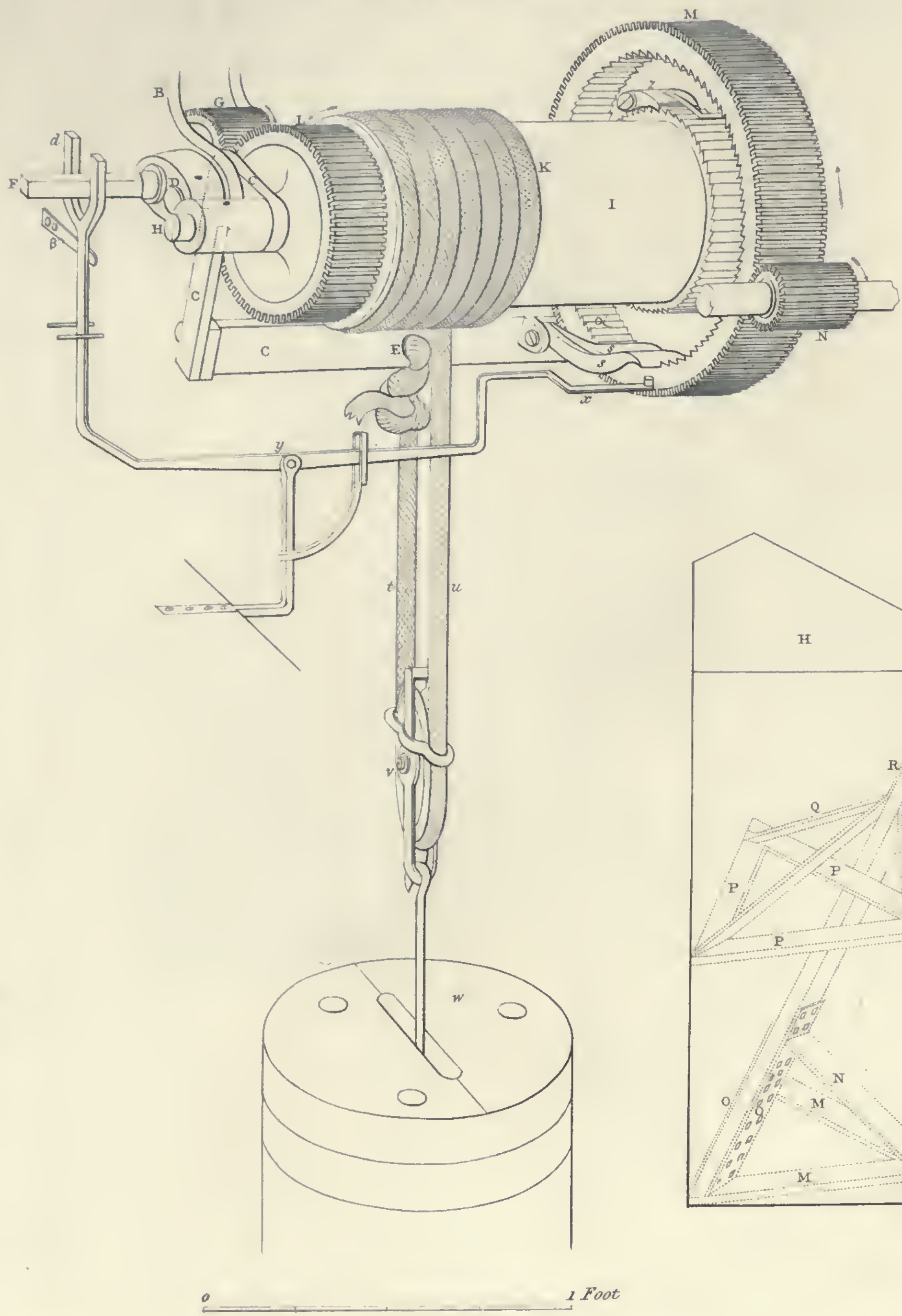
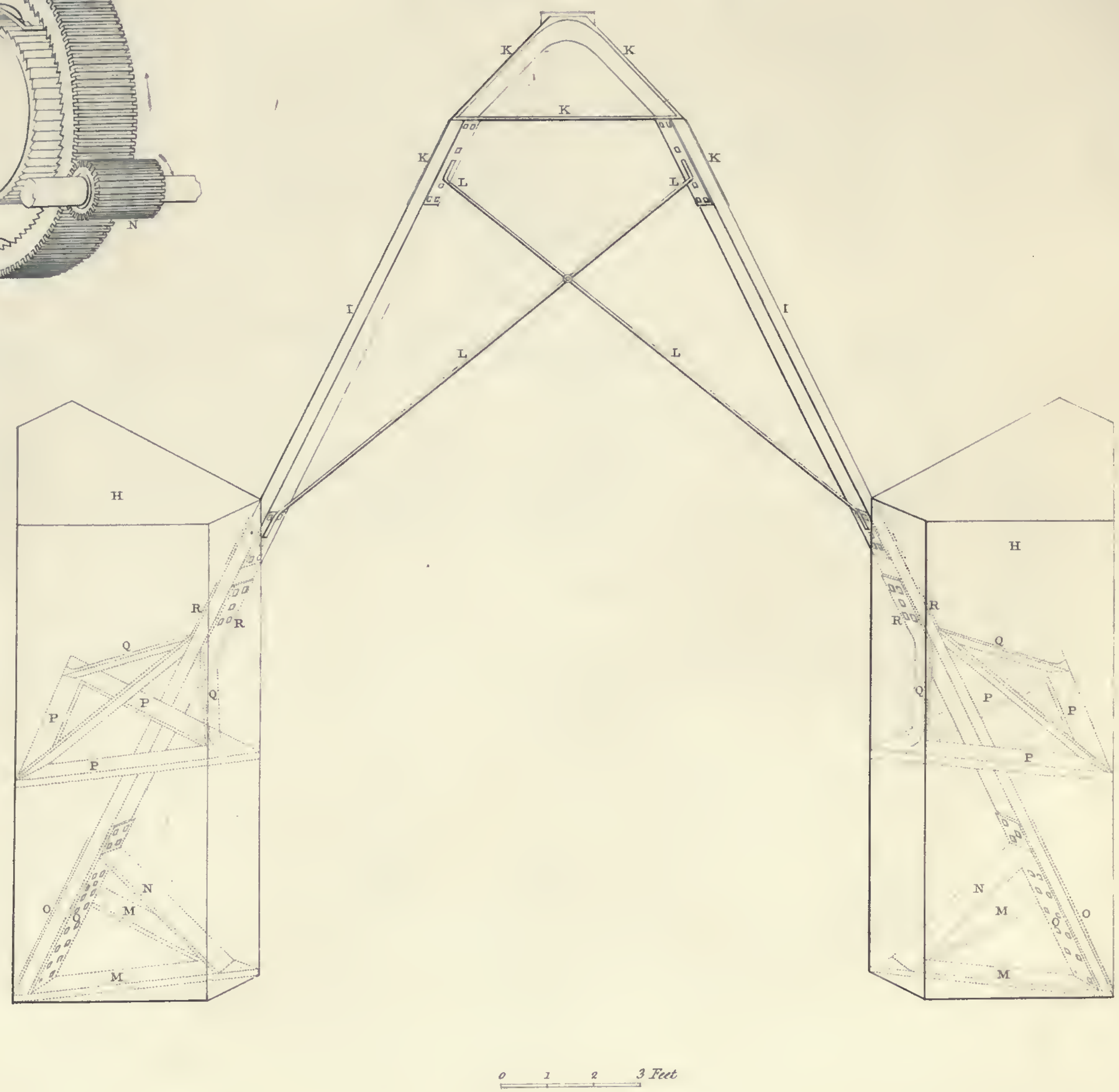


Fig. 36.

Support of upper pivot of polar axis.



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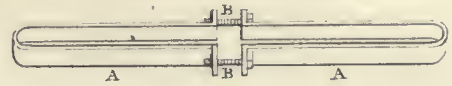


Fig. 41.

Strap of the polar frame.

Fig. 39.

Principal rod of the polar frame.

Fig. 40.

Brace of the polar frame.

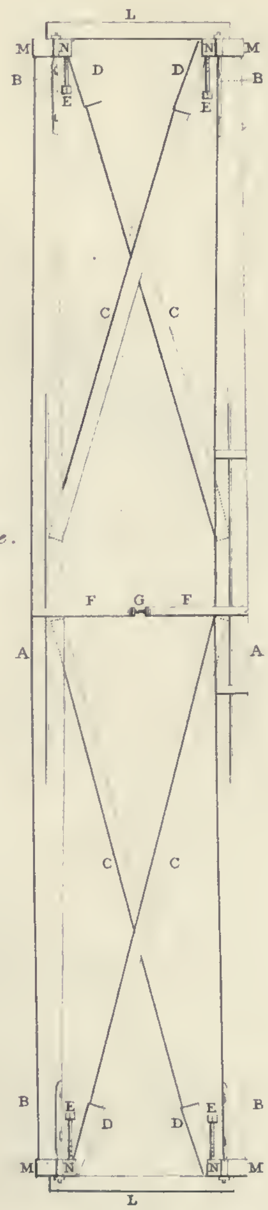


Fig. 42.

Exterior side of the polar frame.

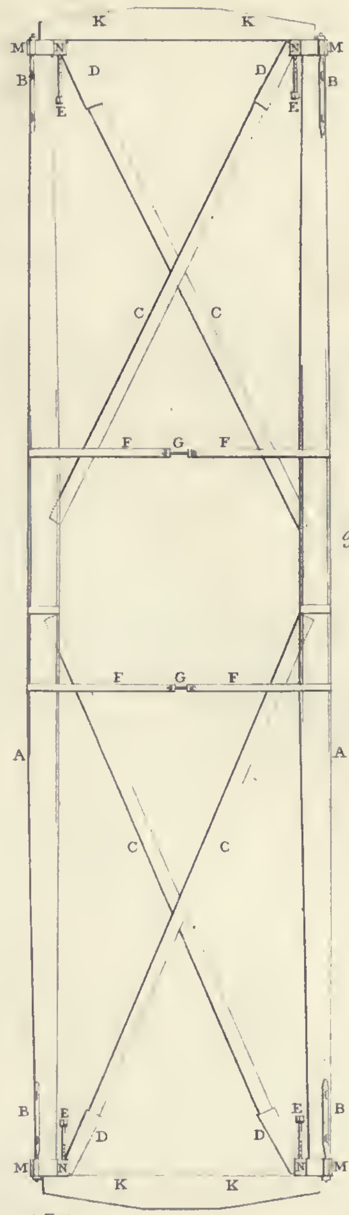


Fig. 43.

Interior side of the polar frame.

Fig. 46.

Bearing of the declination axis.

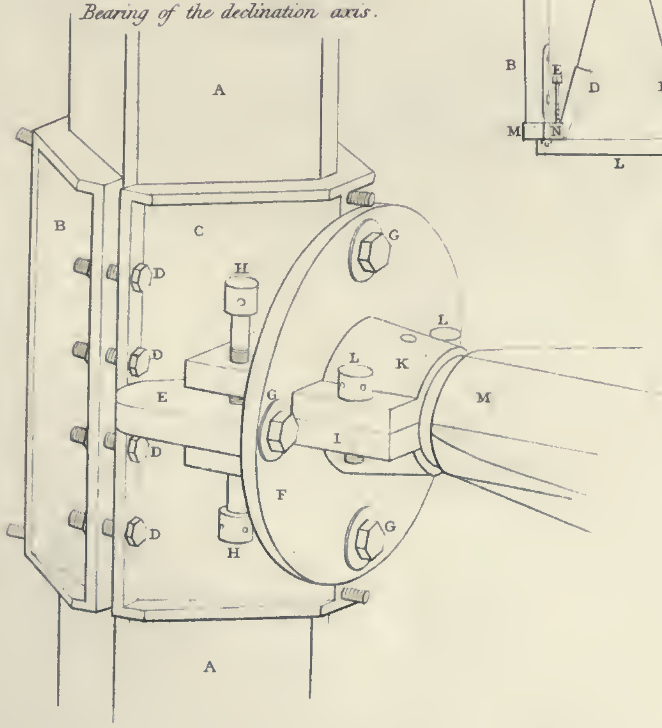
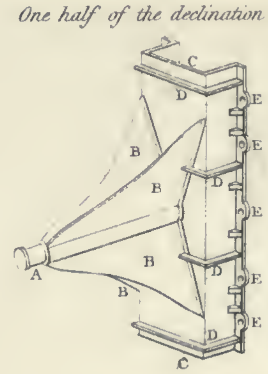


Fig. 45.

One half of the declination axis.



Northumberland Equatoreal and Dome.

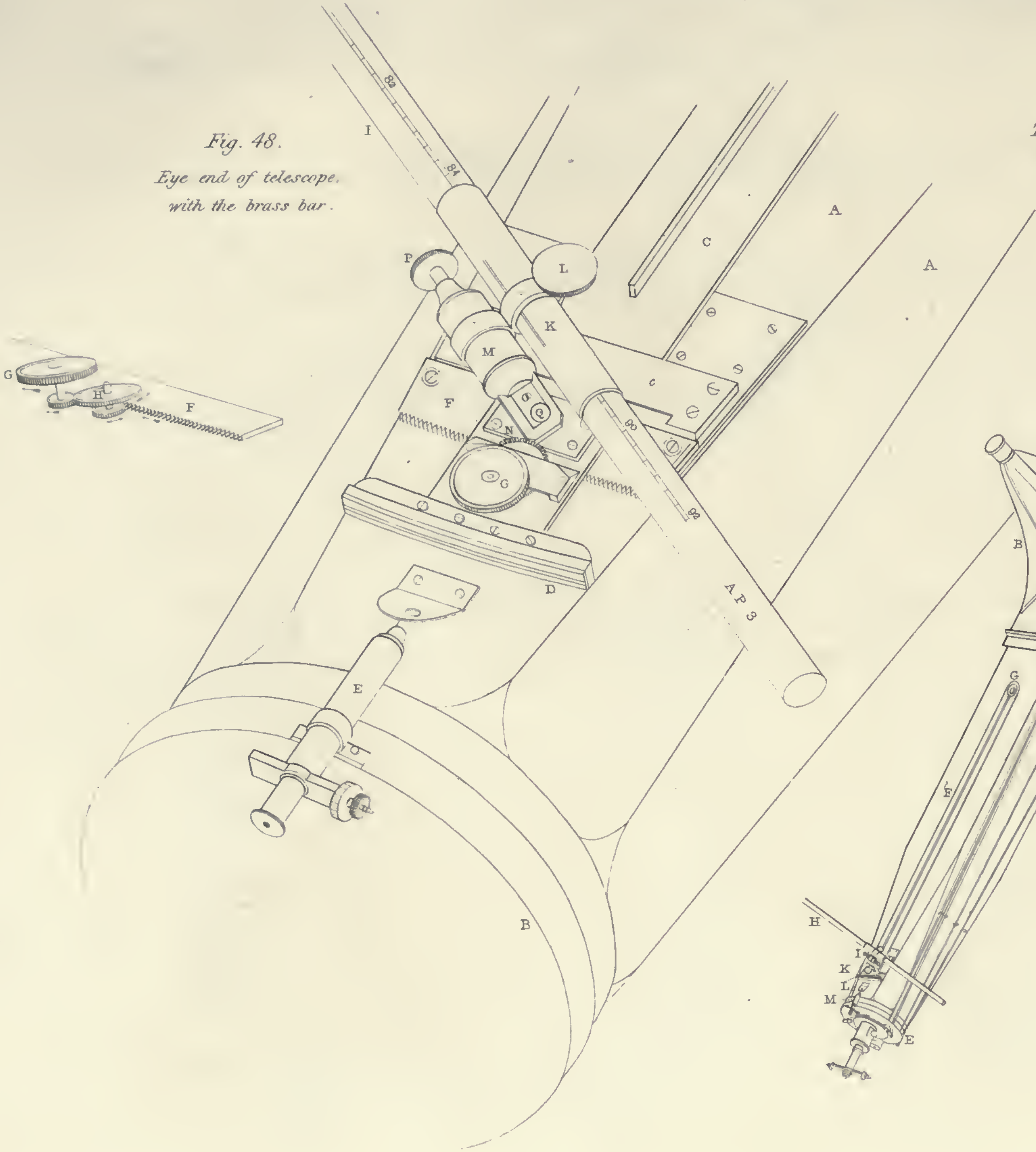


Fig. 48.

Eye end of telescope, with the brass bar.

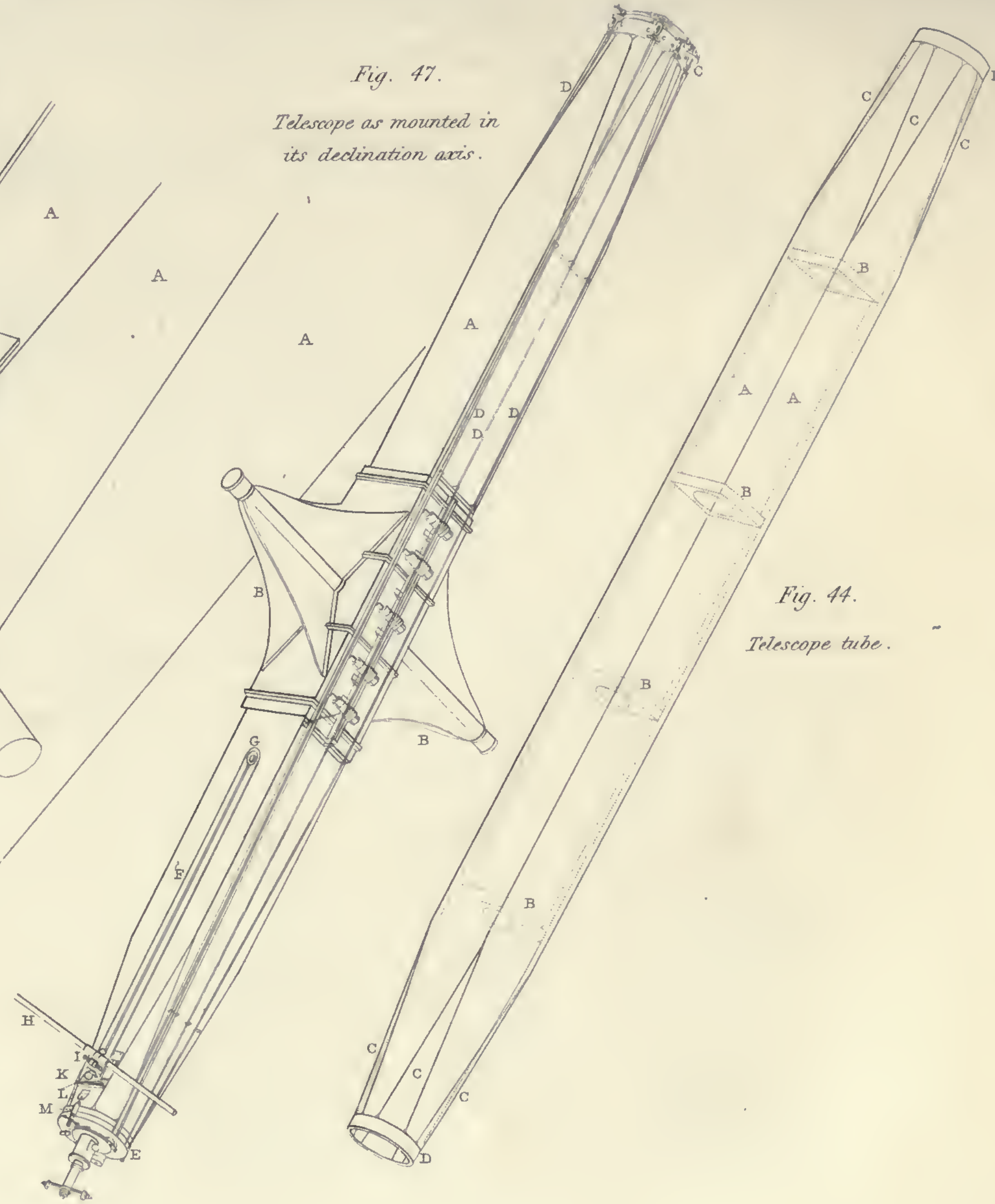


Fig. 47.

Telescope as mounted in its declination axis.

Fig. 44.

Telescope tube.

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Northumberland Equatoreal and Dome.

Declination rods.

Fig. 53.

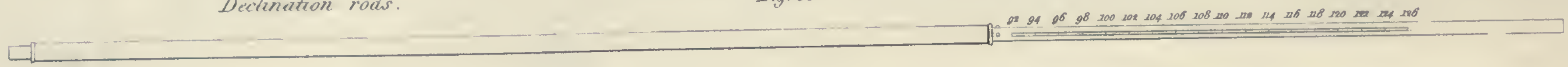

Fig. 52.

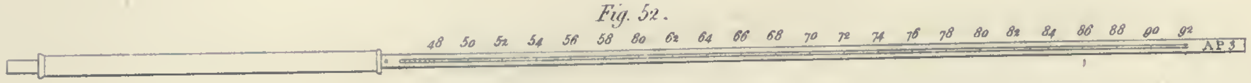

Fig. 49.

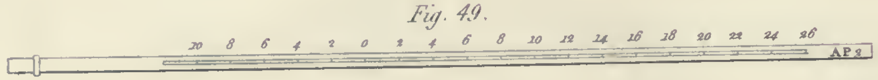

Fig. 50.

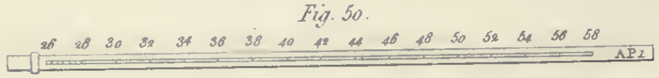

Fig. 54.

Fig. 51.

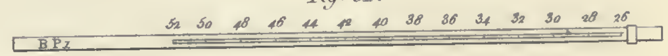

Fig. 56.

Apparatus for adjusting the object glass.

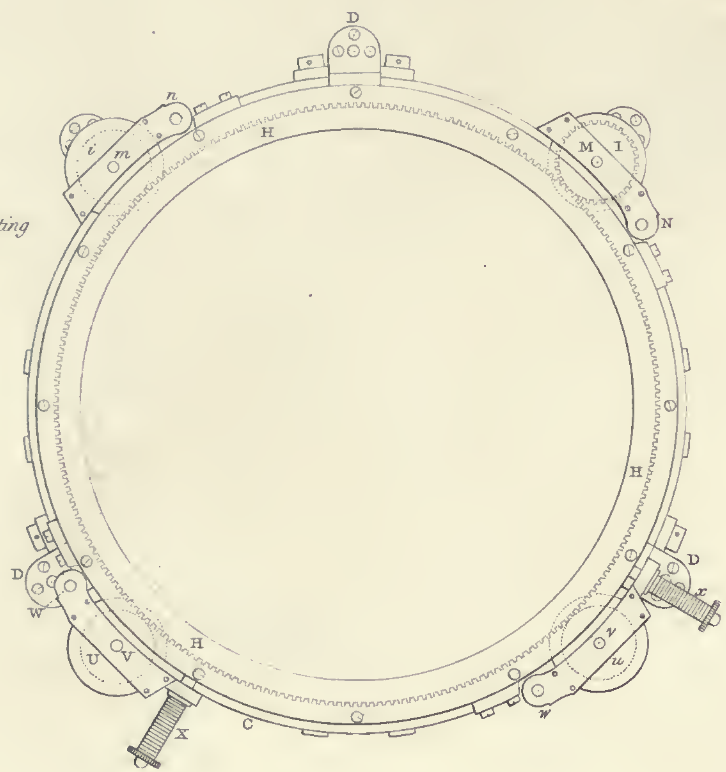

Fig. 57.

Apparatus for adjusting the object glass.

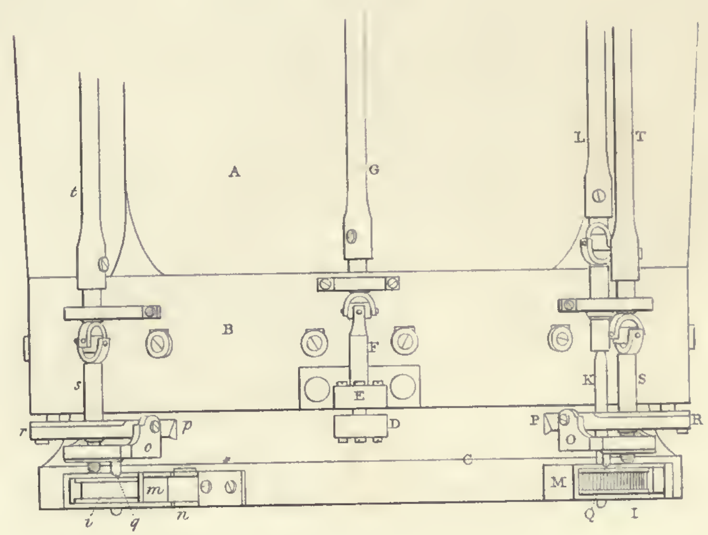

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Fig. 55.

Eye-end of the telescope.

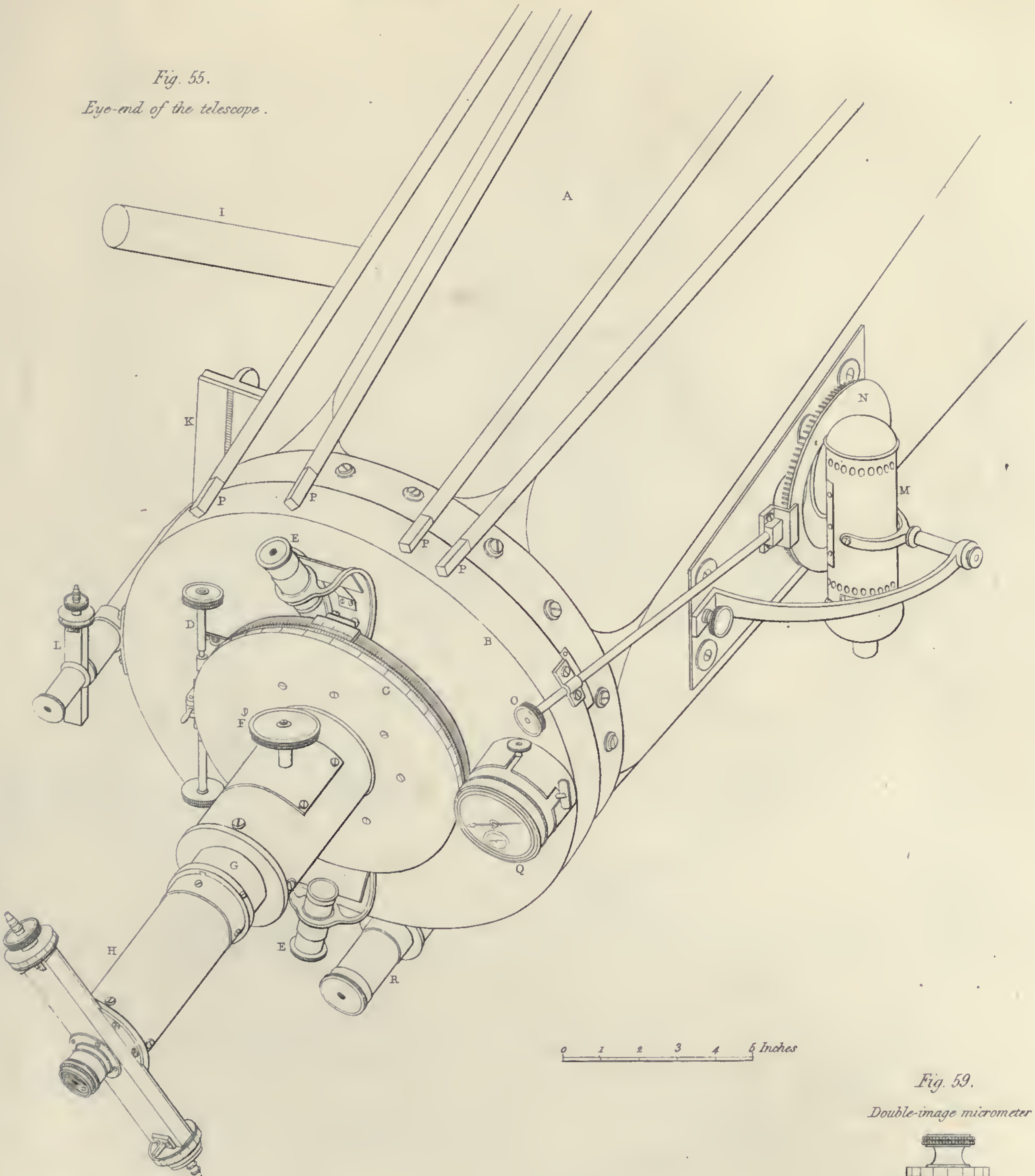

Fig. 59.

Double-image micrometer

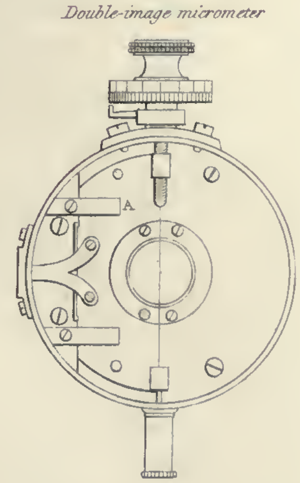

Fig. 58.

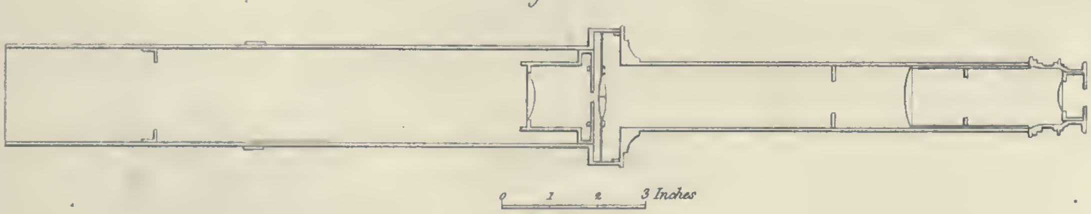

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Fig. 60.

Plan of chair-frame.

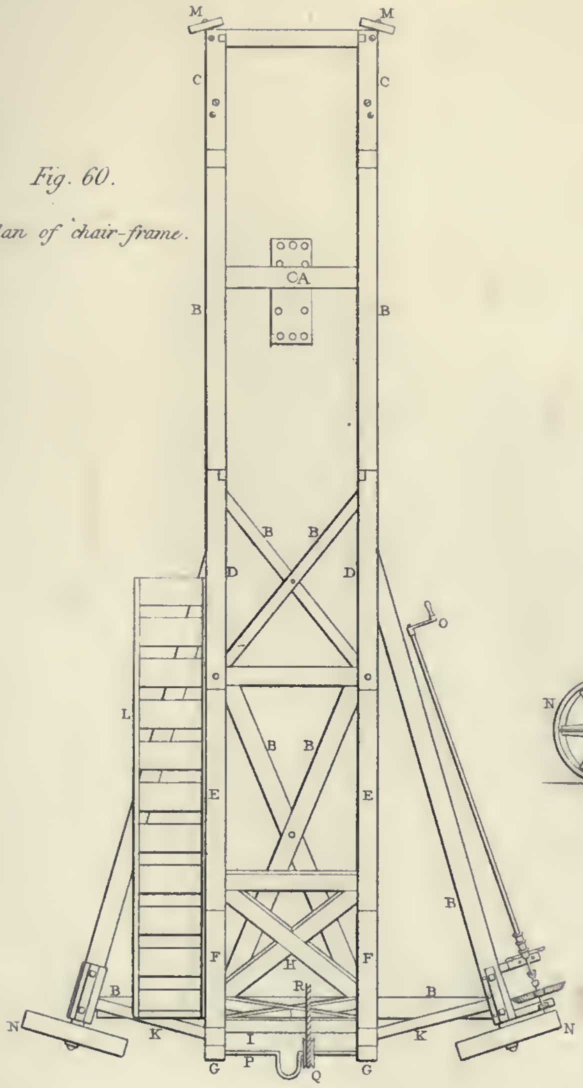

Fig. 61.

Back of chair-frame.

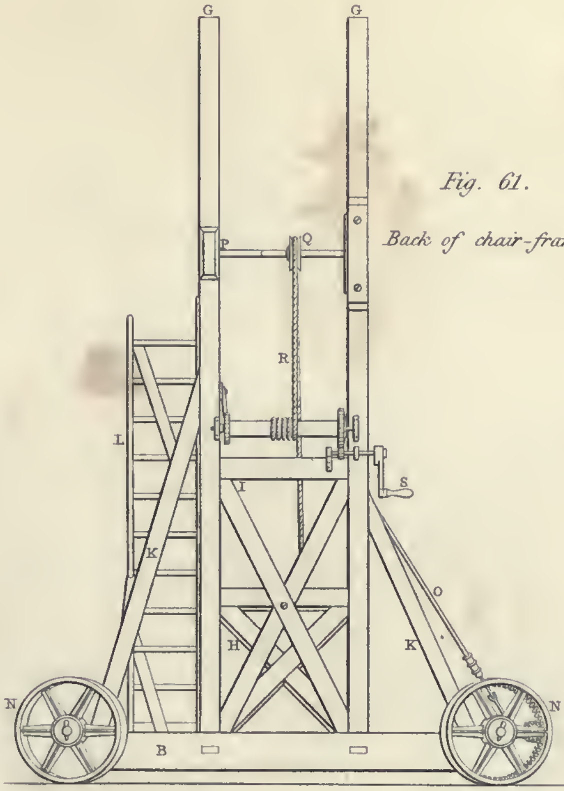

Fig. 62.

Interior side of the chair-frame.

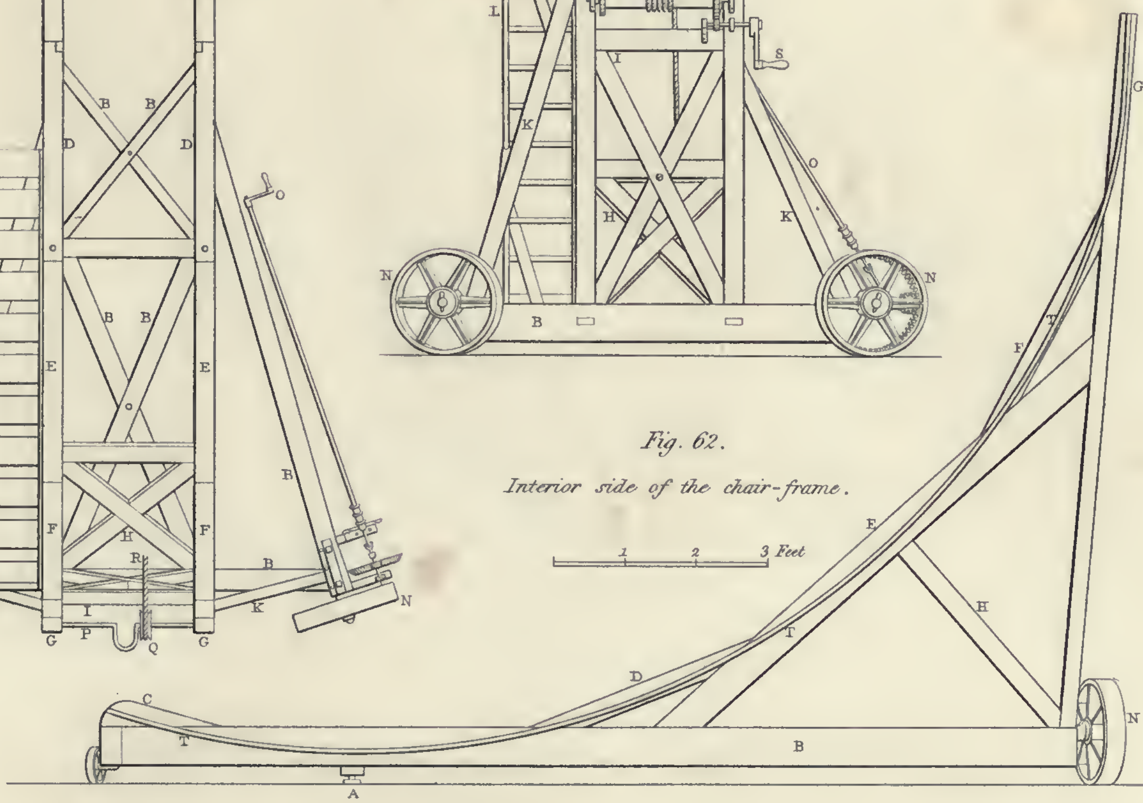

Fig. 63.—Machinery for slow motion of the chair-frame.

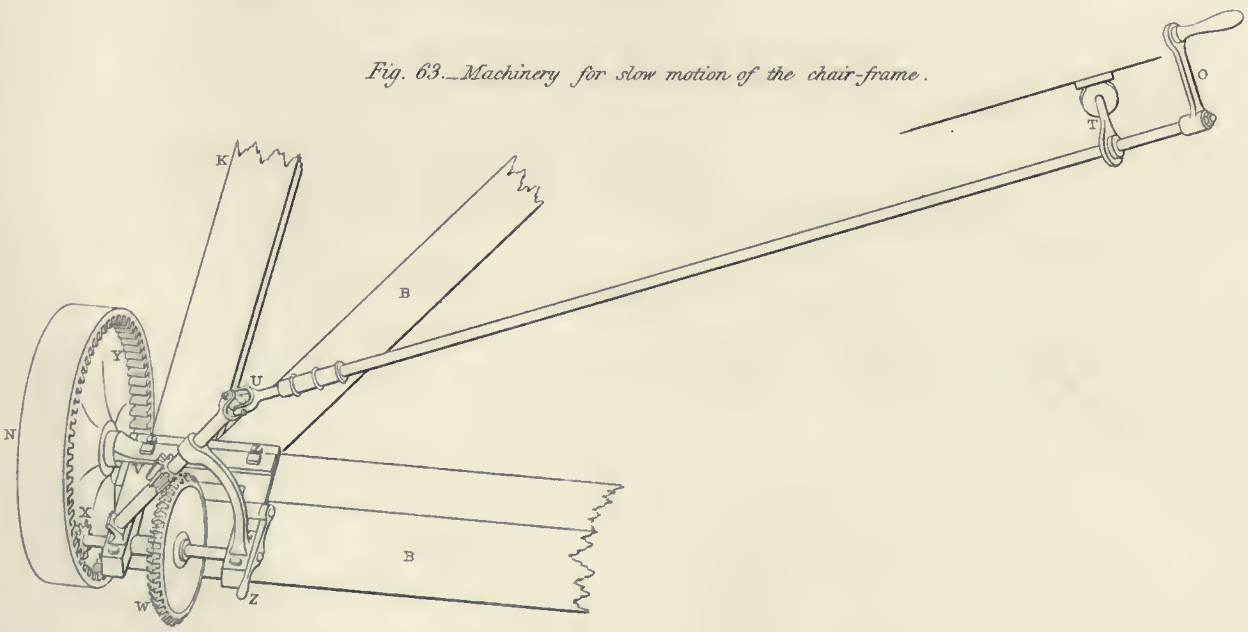

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Fig. 64.

Upper chair.

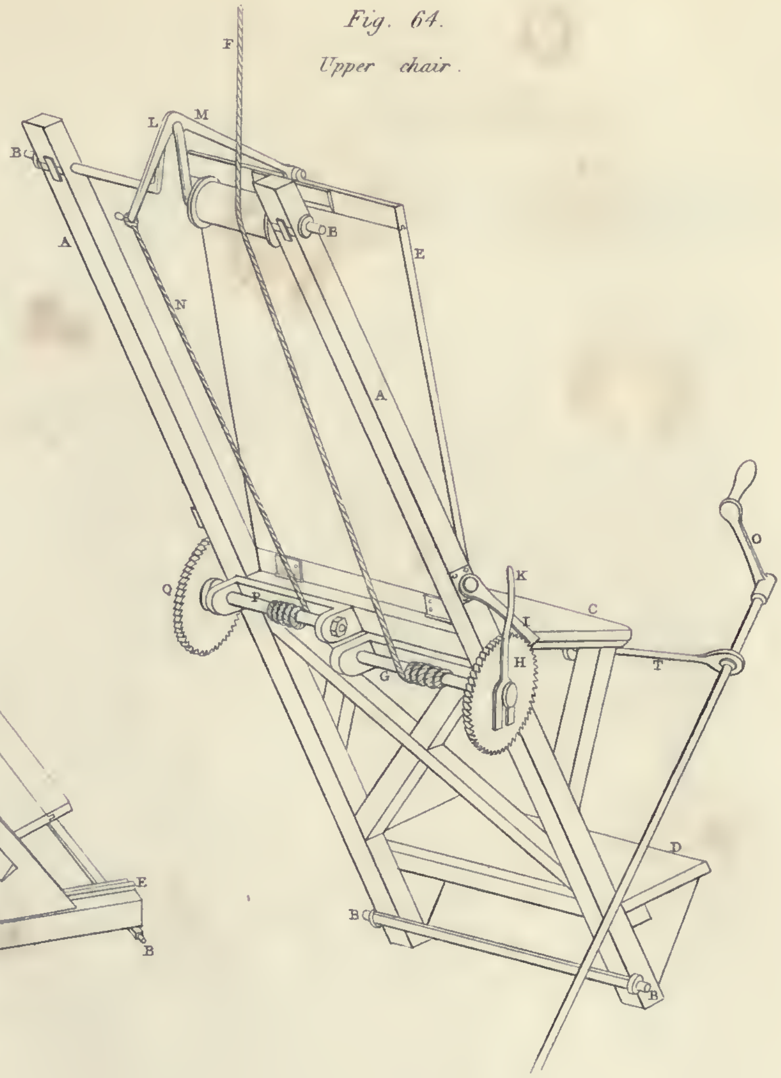


Fig. 65

Lower chair.

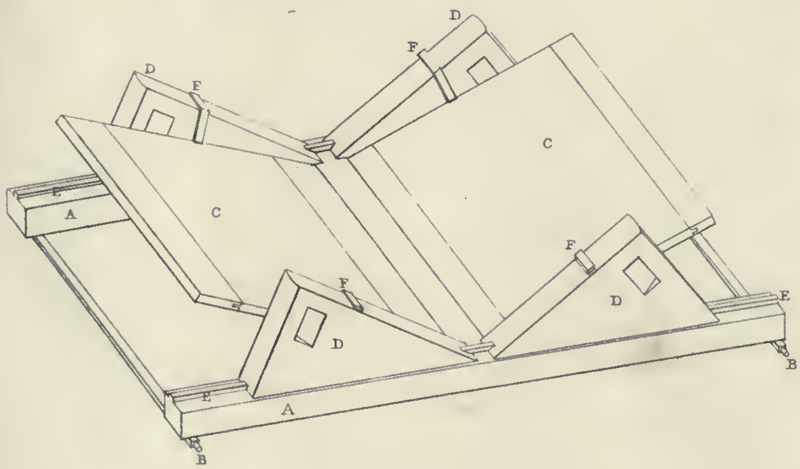
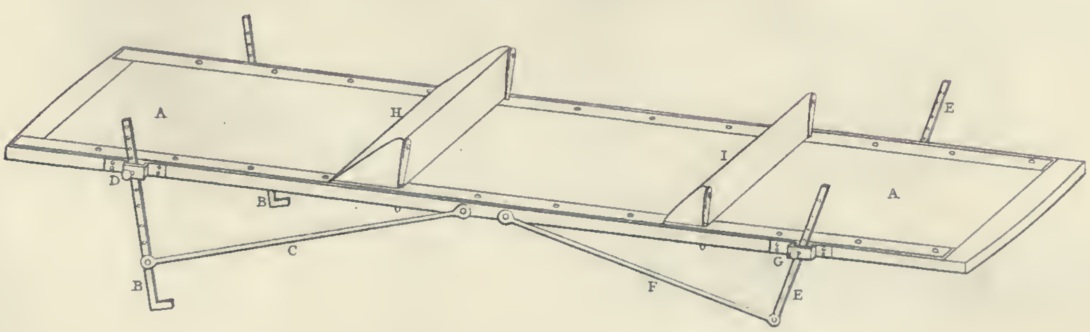


Fig. 66.

Chair placed within the polar axis.



0 1 2 Feet

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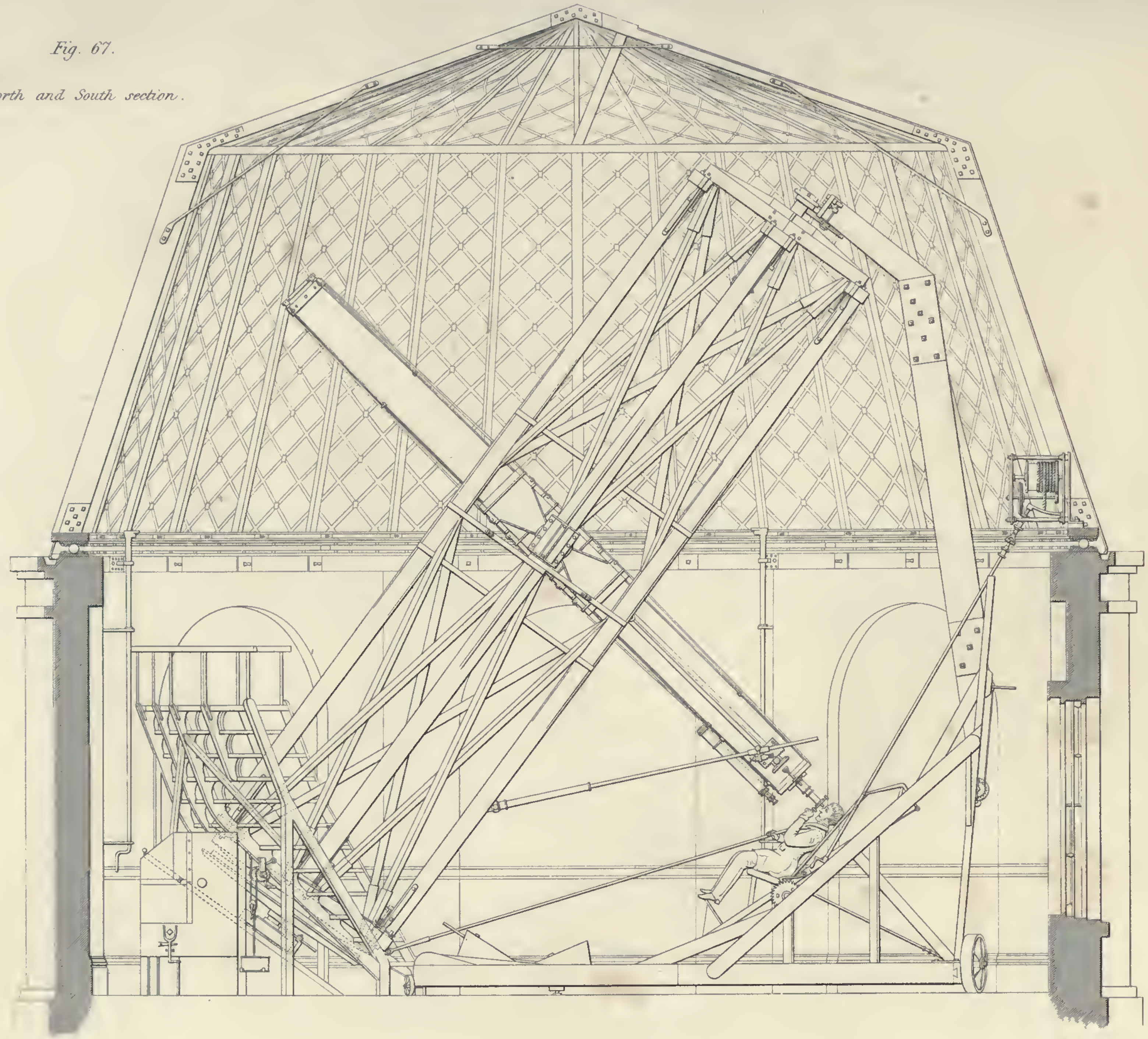
Fig. 67.

North and South section.



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